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THE MALAYAN ECONOMIC REVIEW

(THE JOURNAL OF THE MALAYAN ECONOMIC SOCIETY)

VOLUME IV, No. 2

OCTOBER 1959

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GROUP BEHAVIOUR OF MULTI-PRODUCT FIRMS — LARGE NUMBERS*

By S. J. GILANI,
University of Malaya

Chamberlin's analysis of the behaviour of firms in the large-group case¹ is based on the important assumption that each single firm in the group produces one single product. This assumption is largely retained even in Kaldor's study of the problem.² In this paper an attempt will be made to analyse the situation after removing the assumption of single-product production.

I

In the case of multiple-product firms it is necessary first of all to ensure that the concept of 'group' makes sense — at least as much sense as it makes in the case of single-product firms. Where every firm is producing a number of products, not necessarily of the same line, it may well be that the boundaries of the 'industry' will not stop short of those of the entire economy. The several products of a firm will in general be related on the cost side, and every product has its own demand-interrelationships with the products of other firms which in turn have their cost-interrelationships, and so on. The expansion of the boundary with respect of any one product therefore takes place along two directions, the direction of demand and the direction of supply, and this expansion continues until it reaches the boundary of the entire economy.³ The method of partial equilibrium analysis would appear therefore to fail, although it has its many good points in so far as it brings out clearly the immediate effects of some move made somewhere in the economy. Is there however any scope for reconciliation?

In the relevant literature the term market has been used as a correlative of industry. It must however be borne in mind that market is essentially concerned with sales whereas the reference of industry is towards production. In the theory of the firm no distinction has been made between production and sales. In the case of a single-product firm there is no especial need to make that distinction if all

* This paper forms a chapter of my thesis "The Theory of the Multiple-Product Firm," submitted for the Ph.D. degree in Economic Theory in the Faculty of Economics, University of London, in 1958.

1. E. H. Chamberlin, *The Theory of Monopolistic Competition*, Cambridge, Massachusetts: Harvard University Press, 1933.

2. N. Kaldor, "Market Imperfections and Excess Capacity," *Economica*, New Series, Vol. II, 1935, pp. 33 — 50.

3. Although it has not been emphasised, this tendency of an industry to expand its boundaries owing to the conditions of supply is by no means absent in the case of a single-product firm; however in the case of a multiple-product firm it becomes more pronounced. The following passage from Machlup may be quoted in this connection:—

"The simultaneous attention to cross-elasticities of demand for the products and cross-elasticities of factor supply or cost makes for more variables, that is, for a large extension of the 'industry' than we should like to handle. Hence it will be better to concentrate either on demand-interrelationships or on cost-interrelationships, but not to intermingle them, although this means that 'industry' from the point of view of product-relationship (demand-conditions) will usually be another group than the 'industry' from the point of view of factor-relationship (cost-conditions)." *The Economics of Sellers' Competition*, Baltimore: John Hopkins Press, 1952, p. 215.

that is produced is sold to a single group of consumers. But what about the case of a discriminating monopolist? He is said to be selling his goods in different markets, while the goods themselves are assumed to be homogeneous, so that it would be unreasonable to say that they belong to more than one industry. The conclusion is therefore that a firm need not belong to as many industries as there are markets in which it sells its goods. The distinction between industry and market thus becomes clear.

One more point should be mentioned. In theory we sometimes speak of the threat of entry into a particular trade of potential competitors who are employing similar production techniques in their own trades. If grouping is to be made with reference to production techniques, such entry does not make sense because those who are regarded as potential competitors are in fact already a part of the group. It is expected that the gaps between the techniques of production, if any, can be filled without much difficulty. For the term potential competition to make sense it is essential that we distinguish sharply between sales and production. Potential competitors may be conceived to belong to the same industry but not the same market.

In this connection it is appropriate to refer to the attempt made by Andrews to fit the concept of potential competition into the framework of industrial analysis.⁴ For this Andrews has to define industry in a 'narrower sense' and in a 'broader sense'. His narrower definition includes "all the businesses which are in most active competition with one another on any short run analysis". On the other hand the broader boundary of the industry would include "all those who possess such facilities", and "who could well turn over to the product in a rather longer run". It is obvious from these passages that the two definitions of industry largely involve the distinction between sales and production.

In this way we have separated market from industry. What interests us directly from the point of view of grouping is market. We speak of market-structures, of polypoly, oligopoly and monopoly. All these terms refer to selling. On this basis it is clear that multi-product production will not add to the vagueness of the group concept. Of course the several products of a firm will be related on the cost side in view of the fact that the possibility of product-transformation will generally exist, but that would only mean that our group is not some watertight compartment, but that factors external to the group may, and usually will influence the state of affairs within the group. Product-transformation within an individual firm implies that it can produce more or less of a product, to be sold in a particular market. This however does not make the group concept meaningless.

As for the vagueness that surrounds the concept of market itself, this is not a special problem of the multi-product firms. The fact that in spite of such vagueness economists have been, in a way, patient with the analysis of the group in the case of single-product firms, is a sufficient justification for our analysis along similar lines. In this respect reliance has been placed on the existence of a break in the chain of substitutes. A similar reliance would suffice in our case.

II

Chamberlin's analysis of the large-group case is based on the assumption⁵ that consumers' preferences are fairly evenly distributed among the different varieties. This implies that the cross-elasticity of demand for the product of any producer

4. P. W. S. Andrews, "Industrial Analysis in Economics," in *Oxford Studies in Price Mechanism*, edited by T. Wilson and P. W. S. Andrews, Oxford: Clarendon Press, 1951, p. 168.

5. E. H. Chamberlin, *op. cit.*, p. 83.

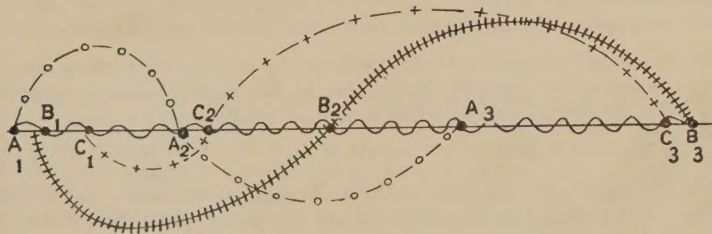
Kaldor has expressed extreme doubts about the validity of this assumption.⁶ is of the same order of magnitude with respect to the price of any of his competitors.

He argues that monopolistic competitors cannot be grouped together in a lump, that they can be best placed in a series, and that every producer settles down at some point along a 'scale'. The idea of such a scale, Kaldor goes on to say, "can be best envisaged in the case of the simplest type of market-imperfection: the distribution of consumers over an area." A producer is fiercely competitive with his close rivals, and less and less with the distant ones. "The problems of duopoly", Kaldor concludes, "arise in all cases where producers are selling substitute goods." J. N. Wolfe⁷ follows Kaldor very closely in this respect. He believes that chains of oligopolistic groups compose the whole market even in the case of imperfect competition with large numbers.

III

In this connection let us first answer one question: Is the identity of a particular duopolistic (or oligopolistic) group sufficiently distinct from that of the others along the scale when the market is made up of multi-product firms?

If a particular firm is producing several differentiated products, it will occupy not one but several positions along the scale.⁸ It will thus have a large number of fiercely competing rivals, although only a few of them will come into consideration with respect of any particular product. We assume that the different products produced by any one firm are placed at sufficiently long distances from one another along the scale so that the interrelationship on the demand side can be neglected.



In the accompanying figure firm A occupies the positions A₁, A₂ and A₃; firm B occupies the positions B₁, B₂ and B₃; and firm C occupies the positions C₁, C₂ and C₃ along the scale. There are a large number of such firms, each one occupying several positions along the scale in accordance with the products it produces. In the figure A₁ lies close to B₁, A₂ to C₂, and so on as represented by the smaller chains. It is of course possible that one firm is a close rival of another with respect to several products. Thus in addition to B₁ being close to A₁, there may be another position of B close to A₂, and yet another close to A₃. Let us for the present disregard this possibility and assume that one firm is a rival of another firm with respect to one of its products, as shown in the figure. We also assume that although a firm produces many products, its total share of the market is small, so that it has none of the powers of an oligopolist *within the market*.

6. N. Kaldor, *op. cit.*, p. 38.

7. J. N. Wolfe, "The Problem of Oligopoly," *Review of Economic Studies*, Vol. XXI (3), 1953—54, pp. 181—192.

8. It may be noted that if all the products of every member-firm can be placed along the scale, the concept of group becomes as meaningful as in the case of single-product firms.

The small chains which connect the neighbouring points along the scale are due to demand-interrelationship (Kaldor's case). They are Wolfe's chains of oligopolistic groups. Another important fact is that product-transformation is possible between the different products of a firm, so that whereas from the point of view of demand they may be imperfect substitutes occupying rather distant positions along the scale, from the point of view of supply they are closely related. This situation is presented by the larger chains in the figure.

Any shock experienced by A at A_1 owing to say some policy of B at B_1 will be transmitted through A's larger chain to A_2 and A_3 because of product-transformation that will take place within the firm A. C_2 is connected to A_2 by a smaller chain, and as A_2 receives some effect of the shock originally experienced at A_1 by the firm A, C_2 is also affected. Then through the larger chains the effect will pass on to C_1 , C_3 , B_3 and B_2 .

This means that where multi-product production is the rule, the effects of any move by an existing producer or of the entry of a new producer along the scale will not remain confined to the immediate neighbourhood, but will spread rapidly. In our example although firm A has none of its positions at the right end of the scale, the effects of a shock at A_1 will nevertheless be felt there quickly at B_3 and C_3 through the large chains.

What Kaldor has considered along his 'scale' are the instantaneous effects only. He would probably agree that the final situation is likely to be quite different because though neighbourhood has its importance, the chain effects cannot be neglected either. This would be true even if single-product production is assumed, but with that assumption the transmission of the effects of a shock received at one end of the scale to the other end will be a long drawn out process. When we drop the assumption the adjustments take place through additional channels.

We conclude that any so-called duopolistic (or oligopolistic) group along the scale loses much of its separate identity due to this rapid process of adjustment arising from the existence of interrelationship of supply.

IV

The remainder of this paper will be devoted to answering the following questions:- (1) How far are the actions of one member of a particular group along Kaldor's scale governed by the spirit of retaliation — a characteristic feature of an oligopolistic group — when another member makes a change which has unfavourable effects on the former? Is the fear of retaliation likely to deter the second member from taking any action? (2) What is the attitude of any member within the group towards the possibility of a new entry into that group?

The same questions can of course be asked in respect of single-product firms. Here however we shall be concerned only with multi-product firms.

V

First, with regard to the question of retaliation. We may say that the likelihood of any retaliation depends on how deeply a member of a group is hurt by some action of another member within that group. This in turn depends on how strong the strategy of the first is on the defensive side — and the scope for product-transformation makes a very strong defensive strategy. Some action taken by firm B at position B_1 in the figure above may adversely affect the position A_1 of firm A, and if there were no scope for product-transformation this effect would be large and may invite retaliation. With product-transformation however, other positions of A afford protection. The net unfavourable effect will thus be small, and A is less likely to retaliate.

Kaldor's stress on the essentially duopolistic nature of the competitors along the scale seems to point to the rigidity of the situation; the absence of knowledge about the rival's reaction will generally tend to deter any action. On the other hand multi-product production, with the scope for product-transformation, would seem to make the situation less rigid. If a firm produces more than one product, it is comparatively free to vary the price (or other variables) of any one or more of its products. The presence of other products gives it a sense of security. It feels, justifiably, that if by chance it does not succeed in an action it has taken, it can make adjustments along other lines. The greater the ease with which its products can be transformed, the greater is this sense of security, and hence the greater the chances for profit-maximization motive to overrule security motive.⁹ Conversely the elbowroom allowed to the rival by the presence of other products along the scale makes fierce retaliation from its less expected — all the more reason therefore to take any action.

VI

Turning now to the next question regarding the attitude of a particular member of a group towards a new entry into that group, our analysis has shown that the group is not likely to be very oligopolistic in nature. A new entry would not threaten the position (viewed in totality) of a firm in the same manner that it would in a really oligopolistic market.

Although groups do exist along the scale, their effectiveness is so much reduced in our model that Kaldor's thesis of duopoly being "the leading species of a large genus" cannot be easily accepted. Saville Row tailors will be less concerned with "fluctuations in the East-end clothes" only if it is true that Saville Row tailors have no branch establishments in the East-end.

VII

Finally, we shall revert to a point which we had assumed away in connection with our model. This refers to the possibility of a firm being a close rival of another with respect to several of its products. If we take account of this possibility, then adjustments in the different products made by a firm in order to meet a rival's policy will mean that another rival will receive shocks at various positions and *all at the same time*. The total effect may be considerable and may invoke serious repercussions. For this reason the firm may refrain from making such adjustments, and the situation will then appear very duopolistic (or oligopolistic). In that case Kaldor's argument will assume force. However this is but one of several possibilities; there are others where it is not likely to be so forceful.

9. Cf. K. W. Rothschild, "Price Theory and Oligopoly," *Economic Journal*, Vol. LVII, 1947. pp. 299-320.

THE TEACHING OF ECONOMICS IN SOUTHEAST ASIA

BY CLIFTON R. WHARTON, JR.*

My remarks will be exclusively devoted to the teaching of economics in the preparation of *economists*, rather than the general teaching of economics. Moreover my remarks will embrace observations on the teaching of economics in Southeast Asia generally rather than Malaya in particular.¹

The choice of emphasis upon the training of economic scientists rather than the incidental training in economics for the undergraduate arts student or the secondary school student is quite intentional. An introduction to the basic principles of economics is conceded to be a worthwhile endeavour among all students destined to play a part or role in the affairs of their nation — whether as a government official or as a voting citizen. However, there has been a serious neglect in the training of economists with a capital "E", compared with the training of economists with a small "e".

When I speak of the training of economists with a capital "E", I am referring primarily to graduate candidates for the master's or doctoral degrees in economics. These are the students who usually intend to make use of their training in some direct fashion. Often they are the persons who are primarily responsible for the formulation of five year plans, the implementation of development schemes, and the evaluation of alternative national economic policies. The tasks which face these individuals are difficult ones and the pressures for immediate results are tremendous. The complexity of the problems can never be offered as an excuse for delay. The fact that the problems are centuries old and have never been solved is not accepted as a valid objection. Tomorrow means tomorrow and not the day after tomorrow. The drive of new-found nationalistic power will not be denied. The task must be done.

But where are the persons who can answer these challenges? Where are the professionals, technical experts, and trained advisers who can respond to the challenge? I shall not make invidious comparisons among the countries of Southeast Asia, but not one has more than ten Ph.D.s in economics. Most have fewer than five. Those with master's degrees are more numerous, but still far short of the needs. This few in an area of about 160 million people. I cite these figures not to evoke violent reactions, recriminations, or accusations about the restrictive

*Field Associate, Singapore Region, the Council on Economic and Cultural Affairs, Inc. of New York. The Council is a private non-profit organization founded by Mr. John D. Rockefeller, 3rd to further the development of research and teaching in agricultural economics and community development in Asia. The views expressed in this paper are naturally the personal ones of Dr. Wharton and do not necessarily represent those of the Council.

This paper was read at the Seminar on the Teaching of Economics organized by the Malayan Economic Society and the Department of Economics, University of Malaya, and held at the University of Malaya on August 8—9, 1959.

1. The term Southeast Asia will be used to include Burma, Thailand, Vietnam, Laos, Cambodia, Malaya, Indonesia, and the Philippines.

educational policies of the former colonial governments. Rather, I mention them to give some indication of the enormous magnitude of the job to be done.²

THE SPECIAL CASE OF RURAL ECONOMICS

The lack of well-trained economic scientists specialized to handle the urgent economic problems of agriculture is particularly acute in Southeast Asia. Sixty to eighty per cent of all Asians are directly dependent upon the production of food. Their economic life is agriculture. Yet the economics of agriculture as a field of study has not yet received nearly the attention befitting its importance.

In every Asian nation, governments are striving to stimulate and to increase the rate of economic growth. The critical importance of agriculture in this process has meant a growing awareness of the need to develop a large number of trained agricultural economists. Many countries have begun to recognize the need for agricultural economists who play such crucial roles in programs of national development.³ The value of professionals who have been specifically trained to study and to analyze the economic problems of farmers and their farms is being established. The problem is to increase the supply of such men and women.

The need for well-trained economic scientists is indisputable, but the supply is woefully inadequate. The universities of Southeast Asia are beset by a wide range of problems — professional isolation of the faculty members, inadequate or insufficient financing for research, a dearth of teaching materials which are relevant to the conditions of the country, salary levels so low that many professors are forced to seek outside supplementary employment — these and many other problems would require a separate paper for adequate treatment. The existence of these problems should not be used to criticize the adequacy of current efforts toward improved education. Most nations of Southeast Asia have only recently begun their independent efforts at directing and developing their own educational systems; the task is not an easy one. Nevertheless, it is dangerous to ignore the existence of these difficulties impeding the educational process. The size of the task which must be done at each educational level from primary through the university cannot be over-stressed.

In the face of these and other problems, the present universities in Southeast Asia are trying, with their limited resources, to make the contribution which they can. A few economists, if only with a small "e", are being produced, for better or worse. Until the educational institutions in these regions are more adequately prepared, graduate training must depend heavily upon educational institutions in the Western world. Hence, students from Southeast Asia who desire graduate training in economics can only do so by going abroad.

This procedure is at best a temporary palliative. Foreign graduate training for such students suffers from all the problems of foreign study — such as high cost, the dissimilar backgrounds and interests of the Asian student from his Western classmates, the inapplicable or unfamiliar subject matter in many courses for Asian conditions, and the differing emphases and focuses given to economic

2. This problem is not limited to economics. However, it is true that the social sciences in general are probably less developed in Southeast Asia compared with the physical or biological sciences. This is particularly so when we consider the amount of research which has been done in the social sciences.

3. For a good summary of the work in agricultural economics in Asia, see the recent ECAFE monograph, *Agricultural Economics Research in Asia and the Far East*, (Bangkok: Economic Commission for Asia and the Far East, and Food and Agriculture Organization, 1958).

problems. The more rapidly that such graduate training is developed in Asia, the sooner will these nations be in a position to profit from their own research and from the new knowledge which is uncovered concerning the problems of growth in their own countries.

But until facilities for graduate training develop on the local scene, what about the need for further economic training, even if abroad? Somehow, there is a feeling current that the tasks and problems which face economists in Southeast Asia do not require economists with a capital "E". These problems can be solved by the drones, the partially trained expert who has a nodding acquaintance with the field. "After all, those new-fangled techniques can't be used out here so why bother to learn them. Besides they are based on western economics and Asia is different."

Let us see what are the recent developments at which these sneers are directed.

RECENT DEVELOPMENTS IN ECONOMICS IN THE UNITED STATES

A complete coverage of all fields or subjects would be impossible in this brief compass. Let me give one example of the rapidity with which developments take place. In 1958, the U.S. Department of Agriculture issued a handbook titled, "Analytical Tools for Studying Demand and Price Structures".⁴ The literature cited contains 108 entries, more than eighty per cent of which have appeared since 1950.

Let me therefore concentrate my attention on only one field, one which has been for some economists the most fascinating: econometrics.⁵ Econometrics is a branch of economics in which economic theory and modern statistical methods are fused in the analysis of numerical and institutional data. The procedure is largely the application of mathematical economic theory and statistical inferential procedure to economic data in order to produce numerical results and to verify economic laws.

Despite the close relationship, econometrics must be carefully distinguished from mathematical economics and (descriptive) statistical economics. Mathematical economics consists of the formulation of economic theory in mathematical terms and uses mathematical procedures to derive economic relationships. Statistical (descriptive) economics is largely the presentation or summary of the economic data. However, the principles of statistical analysis or inference, especially the methodologies developed by R. A. Fisher, underlie most econometrics, even though Fisher developed his techniques largely for the biological sciences.

The practical importance of econometrics is that often in economic science we need numerical results in order to be able to make quantitative predictions. Such results are particularly necessary in the field of economic policy when the government takes an action which affects the forces of demand or supply. If a government intervenes in some fashion and affects the supply of a commodity or product, the economic effect of this governmental action will depend upon certain

4. Richard J. Foote, *Analytical Tools for Studying Demand and Price Structures*, Agriculture Handbook No. 146 (Washington, D.C.: U.S. Government Printing Office, 1958).

5. The interested beginner should consult: Gerhard Tintner, *Econometrics*, (New York: John Wiley & Sons, 1952); Lawrence R. Klein, *A Textbook of Econometrics* (Illinois: Row, Peterson & Co., 1953); and William C. Hood and Tjalling C. Koopmans, *Studies in Econometric Method*, Cowles Commission Monograph 14 (New York: John Wiley & Sons, 1953). For a quick summary of some early history see, Carl F. Christ, "History of the Cowles Commission," *Economic Theory and Measurement*, 20th Annual Report of the Cowles Commission, 1952.

structural parameters of the demand function, for instance the price elasticity of demand. The estimation of this structural parameter is therefore of great importance.

Professor Tintner in his textbook on econometrics uses a number of actual investigations to show the practical, policy applications of such research. One example which he uses comes from a pioneer in econometrics, the late Professor Henry Schultz.⁶ He uses Schultz' investigation of the interrelations of the demand for beef and pork, out of which he derived the following elasticities: price elasticity of beef with respect to the price of beef, $-.49$; price elasticity of beef with respect to the price of pork (cross elasticity) $+.46$; income elasticity of the demand for beef, $+.36$.

"These results can be interpreted in the following way: If other things remain equal, and only the price of beef increases by 1 per cent, then the demand for beef will decrease by almost $\frac{1}{2}$ of 1 per cent. If other things remain equal and the price of pork increases by 1 per cent, then the demand for beef will increase by about $\frac{1}{2}$ of 1 per cent. This shows that beef and pork are substitutes in consumption; the cross elasticity measures in a fashion the degree of substitutability. If other things remain equal and the payrolls increase by 1 per cent, then the demand for beef will increase by more than $\frac{1}{3}$ of 1 per cent.

"As a possible application to policy, let us consider two cases. Assume that the government deals with a situation in which the results of the analysis hold true. It contemplates the increase of pork prices by 10 per cent, for instance by government price fixing. Then it must face the fact that the demand for beef will also increase by 4.6 per cent, and it must make allowance for the increased demand for beef. This may be very important in a comprehensive system of agricultural planning.

"In the second hypothetical case, assume that the government decides to increase the total earnings of the workers by 10 per cent, for instance by introducing minimum wages. Then it has to face the fact that the demand for beef will increase by approximately 3.6 per cent. The government has to make allowance for this in its planning of agricultural production."⁷

Whether the economic result of a particular economic policy is or is not desirable is a *normative* question which depends on the social ends being sought. Economics and econometrics research can only tell us what the probable effects of an economic policy are likely to be; they can never tell us whether or not an economic policy *should* be followed. This distinction between the positive and normative sides of economics is important since the unsuspecting layman frequently confuses the economic predictions of economists with their policy prescriptions. This is not to deny the value or right of economists to play a normative role. What I do condemn are those economists who mask their normative preachments in the garb of economic positivism.

6. Henry Schultz, *The Theory and Measurement of Demand*, (Chicago; University of Chicago Press, 1938).

7. Gerhard Tintner, *Econometrics* (New York: John Wiley & Sons, 1952), pp. 39 — 40. Tintner correctly points out that there were possible errors in Schultz' pioneering work which later researchers learned to guard against such as the problems of identification, multicollinearity, and the interdependence of successive observations.

Econometric developments have been in the fields of deriving demand functions, supply functions, cost functions, production functions, utility and related risk functions, static models of the total economy, dynamic models of the total economy. In addition to these behavioural and technological relations, econometrics has also been applied to institutional or legal relations such as tax rates, tariffs, and minimum reserve ratios.

The basic "output" of an econometric study is a quantitative relationship — a relationship which must be relevant to something important, simple in structure and in accord with economic theory, either accepted or new (to be tested).

Linear programming has been especially rapid in its recent developments.⁸ Linear programming is usually defined to include three main branches — game theory as developed by the late Professor von Neumann and Oskar Morgenstern,⁹ input-output analysis mainly espoused by Professor Leontief,¹⁰ and linear programming proper as begun by George B. Dantzig (actually as a technique for planning the diversified activities of the U.S. Air Force). Whether dealing with an individual firm or a total economy, the essential purpose of linear programming is to determine the best allocation of a large number of discrete means in the achievement of an optimum or "best" end.

The two basic purposes of econometrics are (a) to explain *ex post* something which we do not understand, or (b) to forecast what is likely to happen based upon our understanding of the past.

The estimation of economic relations or the determination of quantitative relationships among economic variables is not an easy task. There is no guarantee of success. One of the most difficult problems is to pick the right tools; another is finding the most suitable real world counterpart for a theoretical variable.

The development of econometrics with its heavy empirical orientation and emphasis upon the problems of the real world, fitted in well with the general American preference for "practicality" or discovering useful knowledge. In large measure, these developments account for the strong burst in economics in the United States during the last thirty years.

If we choose 1932, when the Cowles Commission for Research in Economics was established, or if we start in 1933, when the professional journal *Econometrica* began, one can trace the rapid growth and increasing scope of this field. Few

8. See Robert Dorfman, Paul A. Samuelson, and Robert M. Solow, *Linear Programming and Economic Analysis*. (New York: McGraw Hill, 1958).

9. John von Neumann and Oskar Morgenstern, *Theory of Games and Economic Behaviour*, (Princeton: Princeton University Press, 1944); see also, J. C. C. McKinsey, *Introduction to the Theory of Games*, (New York: McGraw Hill, 1952).

10. W. W. Leontief, *The Structure of American Economy, 1919 — 29*, (New York: Oxford University Press, 2nd ed., 1951). See also, T. C. Koopmans (ed.), *Activity Analysis of Production and Allocation* (New York: John, Wiley & Sons, 1951); Conference on Research in Income and Wealth, *Input-Output Analysis: An Appraisal*, Studies in Income and Wealth Vol. 18 (Princeton: Princeton University Press, 1955).

subjects have failed to escape attention: from automobiles¹¹ to race relations¹²; from hosiery mills¹³ to Russian industry¹⁴; from consumption¹⁵, to transportation¹⁶; from livestock-feed¹⁷ to the oil industry¹⁸; from meat¹⁹ to beer²⁰; from inflation²¹ to housing²²; from wheat²³ to household budgets.²⁴ It is to be noted that the choice of citations is not exhaustive under any of the topics; selections are merely to give a brief indication of the research which has been done.

11. M. J. Farrell, "The Demand for Motor-Cars in the United States," *Journal of Royal Statistical Society*, Ser. A, 1954; C. F. Roos and Victor von Szeliski, "Factors Governing Changes in Automobile Demand", in General Motors Corporation, *Dynamics of Automobile Demand*, 1939; Gregory Chi-Chong Chow, *Demand for Automobiles in the United States: A Case Study in Consumer Durables*, (Amsterdam: North Holland Publishing Co., 1957); Marc Nerlove, "A Note on Long-run Automobile Demand", *Journal of Marketing*, 1957.

12. Gary S. Becker, *The Economics of Discrimination*, (Chicago: University of Chicago Press, 1957); D. Gale Johnson, "Some Effects of Region, Community Size, Color, and Occupation on Family and Individual Income," *Studies in Income and Wealth*, Vol. XV (New York: National Bureau of Economic Research, 1952); Morton Zeman, "A Quantitative Analysis of White-Non-white Income Differentials in the United States in 1939," (unpublished Ph.D. dissertation, University of Chicago, 1955).

13. J. Dean, "Statistical Cost Functions of a Hosiery Mill," *Studies in Business Administration* (Chicago: University of Chicago Press, 1941).

14. Francis Seaton, "Production Functions in Soviet Industry," *American Economic Review*, 1959.

15. Milton Friedman, *A Theory of the Consumption Function*, (Princeton: National Bureau of Economic Research, 1957); E. W. Gilboy, "The Propensity to Consume", *Quarterly Journal of Economics*, (November, 1938); T. Haavelmo, "Methods of Measuring the Marginal Propensity to Consume," *Journal of the American Statistical Association*, 1947; Irwin Friend and Irving B. Kravis, "Consumption Patterns and Permanent Income", *American Economic Review*, 1957; Marilyn Dunsing and Margaret G. Reid, "Effect of Varying Degrees of Transitory Income on Income Elasticity of Expenditures," *Journal of the American Statistical Association*, 1958.

16. F. L. Hitchcock, "The Distribution of a Product from Several Sources to Numerous Localities," *Journal of Mathematics and Physics*, 1941; G. B. Dantzig, "Application of the Simplex Method to a Transportation Problem," in T. C. Koopmans (Ed.) *Activity Analysis of Production and Allocation*, (New York: John Wiley & Sons, 1951); A. Charnes and W. W. Cooper, "The Stepping-stone Method of Explaining Linear Programming Calculations in Transportation Problems," *Management Science*, 1954.

17. Karl A. Fox, "A Spatial Equilibrium Model of the Livestock-feed Economy in the United States," *Econometrica*, 1953.

18. Gifford H. Symonds, *Linear Programming: The Solution of Refinery Problems*, (New York: Esso Standard Oil Company, 1955); A. Charnes, W. W. Cooper, and B. Mellon, "Blending Aviation Gasolines: A Study in Programming Inter-dependent Activities in an Integrated Oil Company," *Econometrica*, 1952.

19. William H. Nichols, *Labor Productivity Functions in Meat Packing*. (Chicago: University of Chicago Press, 1948); B. L. French, "Applications of Simultaneous Equations to the analysis of the Demand for Meat" (unpublished thesis, Iowa State College, 1950).

20. Richard Stone, "The Analysis of Market Demand," *Journal of the Royal Statistical Society*, 1945.

21. Philip Cagan, "The Monetary Dynamics of Hyperinflation", in *Studies in the Quantity Theory of Money*, Milton Friedman, Ed., (Chicago: University of Chicago Press, 1956).

22. Margaret G. Reid, "Capital Formation in Residential Real Estate," *Journal of Political Economy*, 1958.

23. Marc Nerlove, "Estimates of the Elasticities of Supply of Selected Agricultural Commodities", *Journal of Farm Economics*, 1956; Kenneth W. Meinken, *The Demand and Price Structure for Wheat*, U.S. Department of Agriculture Bulletin No. 1136 (1955).

24. S. J. Prais and H. S. Houthakker, *The Analysis of Family Budgets*, (Cambridge University, Department of Applied Economics, 1955).

The arbitrary choice of 1932-33 should not be misinterpreted as the beginning point for these developments. Many early works antedate the recent period, such as A.C. Pigou's "A Method for Determining the Numerical Values of Elasticities of Demand," in 1910.²⁵ Nor have these developments been exclusively an American phenomenon. There have been a number of European economists who have been active participants. Among them are the late Richard Stone and S. J. Prais in England; Herman Wold in Sweden; Trygve Haavelmo and Ragnar Frisch in Norway; Jan Tinbergen and Henry Theil in the Netherlands; and Don Patinkin in Israel. In addition, there have been a number of European econometricians who have migrated to the U.S. — Jacob Marschak, Gerhard Tintner, Tjalling C. Koopmans, Franco Modigliani, Wassily W. Leontief, H. S. Houthakker.

Even a U.S. Senator, Paul H. Douglas, has been a contributor to developments due to his pioneering work with the Cobb-Douglas production function which has had such wide usage and applicability.²⁶

The effect which these developments have had on the training of economists in the U.S. can be easily imagined. Extensive knowledge of mathematics and statistics is essential. Students are often required to have had at least calculus, matrix algebra, and perhaps set theory in order to feel comfortable. Descriptive statistics alone is not enough. Little wonder that one finds frequent overlapping of professors from other sciences into economics and *vice versa*. In U.S. graduate schools, economics classes are often spotted with former engineers, mathematicians, statisticians, or biometricians. This is not to say that all departments of economics at the undergraduate and graduate level are bastions of econometrics. There are some which still try to adhere to the old traditions. But it is definitely true that all have felt the impact of these developments and cannot ignore them.

Thus today, it is somewhat *passé* to sit on an Italian roof-top, Marshallian fashion, and contemplate the complexities of this world. The present-day economist does more than his share of thinking too, but he no longer relies solely on the persuasiveness of his logic or gift with a well-turned phrase. His skill in assembling the real facts in a convincing manner are equally if not more important. Whereas once it was fashionable to be discursive or polemical, now it is fashionable to be analytical and statistical. It is no longer possible to say that "We have good reason to believe that the demand curve for commodity X is inelastic". One must now be able to add, "and recent econometric investigations give us estimates that show a range between -12 and -20 ."

RELEVANCE FOR THE TEACHING OF ECONOMICS IN SOUTHEAST ASIA.

What relevance do these developments have for the teaching of economics in Southeast Asia?

Some economists maintain that training in the more advanced and recent areas of economics is a waste for individuals destined to put their training to use in the so-called underdeveloped regions. It is my contention, however, that ultimate applicability and usefulness of knowledge is not always the sole criterion of worthiness, as I hope to make clear.

The real error, it seems to me, which arises from this view is the mistaken belief that the new-fangled ideas — such as input-output matrices, linear programming, and game theory — are the *only* recent developments. The important fact is that the frontiers of economic knowledge have been spread back so far in

25. *Economic Journal*, 1910 (reprinted as Appendix II, in *Economics of Welfare*).

26. The literature is far too extensive to warrant separate listing. The interested reader should consult C. W. Cobb and P. H. Douglas, "A Theory of Production", *American Economic Review*, Vol. 18, 1928 and P. H. Douglas, "Are There Laws of Production", *American Economic Review*, Vol. 38, 1948 (the latter summarizes all the important intervening research).

the last twenty to thirty years, in large part *because* of these techniques, that it is no longer possible to give adequate training in economic science with just a B.A. degree. Moreover, the rapidity with which new knowledge is being uncovered is such that only graduate education is sufficient to give an appreciation of what one *does not know* — in some ways a more admirable quality than what one thinks one knows.

The criticism which is so frequently applied to “western economics” seems to be too frequently misdirected, for either the critic shows that he does not grasp the subject which he is disparaging or he is usually directing his comments at a straw man. Very often when criticizing “western economic theory,” what is really being criticized are the answers given by the theory when applied to a western situation. Usually, the same theory *properly* applied to an Asian setting does not come up with the same answers.

Not all the recent techniques or analytical approaches could or should be attempted in Southeast Asia. Yet, we should not completely ignore certain educational values in this new, highly developed economic methodology.

There is an excellent training value in developing rigorous analytical habits while learning precise research techniques. There is educational value in tying a theoretical concept to a real world situation. The mental exercise involved in mastering these skills also has its rewards.

One of the greatest benefits from advanced training comes in the appreciation of systematic procedures of research whereby specific problems can be investigated. During undergraduate training, one usually becomes aware of the existence of such a thing as a “general scientific method.” But one rarely acquires skill in its use until the graduate level. As Professor George Mehren of the University of California recently pointed out:

“... while there are alternative formulations of this basic methodology, it is general to all types of research, and, therefore, to all types of policy. I stress further, that despite the limitations of orthodox or received methods of economic analysis, there is a systematic and orderly procedure whereby many different types of questions relevant to different types of economic policy may be attacked systematically and with some hope of meaningful and reliable conclusions. So far as I can see, in Asia and in many other parts of the world as well, people who are called economists or agricultural economists are blissfully unaware of the existence of general scientific method....

“... rigorous professional training [is] required to master the research procedure which is such an integral constituent of the processes of policy. I know the prejudices against this, and I am aware that data are frequently unavailable or faulty. But I also know that command over elegant quantitative technique is not at issue here. I speak of command over the orderly processes of thinking and inquiry. Furthermore, it is my experience that the more faulty the data or wider the scope of ignorance with respect to institutions, the greater the necessity for internally consistent logic and perhaps for elegance of research technique.”²⁷

We must recognize that there are serious problems for the Asian student trained abroad. The most serious difficulty is that he must translate and adapt his learning to meet the conditions of his own country — conditions which are

27. From private correspondence (with author's permission).

different from those which are the focus of courses abroad. This is an important area which deserves attention, but the fact that it exists should not be used as an excuse for avoiding the training or judging it as totally useless.

There is one further danger which must be mentioned when considering the recent developments in economics. There is a tendency for the use of these tools to become a fad, or, better yet, a species of magic with which to confound the uninitiated. In a few countries in Asia, where the level of economics training is higher than in Southeast Asia, this disease has sometimes proven to be particularly virulent — assuming proportions which are worse than in the United States. Probably the saddest aspect of this phenomenon is that it has been aggravated by what I refer to elsewhere as the “Underdeveloped Masters” and the “Oriental Ph.D.”²⁸ In conducting a recent survey, I was quite shocked to discover the prevalence with which certain universities in the Western world allow lower standards of performance in the award of a degree to an Asian or African or Latin American student compared with a local student. The consequences of this practice have been rather severe. Often a student has returned to his home country without realizing that he received a less than satisfactory degree. Not all institutions engage in this practice, but the fact that some have and still do, should be a sufficient warning to the innocent.

An increase is definitely needed in the number of persons in Southeast Asia who have been trained at the graduate level. Until this is done, these countries will be continually compelled to call upon the outsider, the foreign expert, even the technician from the disliked former colonial power. The demand for well-qualified professionals in the United States and elsewhere in the Western world is so great that only rarely is the foreign expert the best. Moreover, it is my firm belief that the best expert is the properly trained local expert. There are facts about the local situation which the foreign expert can only learn after years of experience; some, perhaps never.

Temporarily at least, the graduate training must be secured abroad. Only in this fashion will the budding economic scientists be able to profit from and bring back the full benefit of recent developments. Despite independence, the majority of graduate students in Southeast Asia still prefer to receive their graduate training in the educational institutions of the former colonial powers. The Vietnamese and Cambodians prefer to attend French universities; the Malaysians and Burmese prefer to attend British universities; and the Filipinos, the American.²⁹ This pattern is also reflected in the administrative structure, organization, academic titles, and subject-matter emphases of their educational institutions.³⁰

The next step, of course, is the development of local graduate training facilities for Asian economists and agricultural economists which are suited to the needs and conditions of the individual country. In other words, my plea is that one should not imitate the U.S. system or the British system or the Dutch or the French in a blind fashion; rather select the best of each which truly suits your conditions, and perhaps even develop some new ones better fitted to your interests. *But* before rejecting any of them as being worthless, be certain that it is indeed of little value. Do not reject for rejection's sake alone.

28. See my recent monograph, *The U.S. Graduate Training of Asian Agricultural Economists*, (New York: Council on Economic and Cultural Affairs, Inc., 1959), pp. 29, 44—46.

29. *Ibid.*, p. 29.

30. For a good summary of the economics instruction offered by various Southeast Asian universities, see various issues of the *Bulletin* of the Liaison Centre for Economics Departments in Southeast Asian Universities (Headquarters at the University of Malaya, Singapore).

My position should not be interpreted as a proposal for the wholesale graduate training of an unlimited number of Asian economic scientists. Nor should my remarks be construed as an endorsement for the immediate creation of a graduate level department of economics in each university of Southeast Asia. Some expansion of graduate training in economics is needed; perhaps, one or two institutions should pioneer in the establishment of a serious graduate level program in economics which could temporarily serve the Southeast Asia region, until others are able to meet their own needs.

The importance of improving the graduate training of Asian economists and agricultural economists is directly related to the importance of fostering more rapid economic development. If a nation is interested in *economic* development, then they need *economic* scientists.

The critical importance of the economic scientist in the countries of Southeast Asia is that he, more than anyone else, is concerned with the second of the two most compelling drives motivating the people of these areas today: the drive for nationalistic identity and the drive for economic development. The economist and the agricultural economist are directly concerned with the problems of economic development. The number of decisions which are made each day in these countries which have direct economic significance is almost frightening. Yet these decisions must be made. Mistakes are bound to be made, but the more well-trained economists that there are the lower the likelihood of serious mistakes.

The opportunity and need to fuse economic research, economic theory, and economic policy is vital to the Southeast Asian scene. In all these countries, the social scientist is sitting next to one of the largest and most "undeveloped" (or "underdeveloped") sources of research data imaginable. But until recently, and with rare exceptions, the tendency has been for the economic scientist to sit in his academic splendour and indulge in intellectual contemplation. If he did venture forth into the real world on a research mission, his role was to describe or, better yet, to verify his preconceived notions — never to study, to analyse, or to uncover new knowledge about man's problems in his search for a better life in the economic sphere. This is not to criticize such persons unduly, for many of the empirical developments in economics are of recent origin. Also, one must recognize and appreciate the far greater difficulties and frustrations when one attempts empirical research in an underdeveloped region.³¹ But these frustrations should be compared with the far greater pleasures of making substantial inroads on problems which have defied solution for a far longer period than the short lifespan of economic science.

31. I have written on this elsewhere, "The Problems of Collecting and Processing Economic Data on the Agriculture of Underdeveloped Areas," *CECA Newsletter*, No. 3 September 1958 (Council on Economic and Cultural Affairs, Inc., N.Y.). See also, Walter C. Neale, "The Limitations of Indian Village Survey Data," *The Journal of Asian Studies*, 1958.

THE TEACHING OF ECONOMICS IN SOUTHEAST ASIA: A REPLY TO DR. WHARTON

BY T. H. SILCOCK

The first need for any economist is to face the economic realities whether these can be expressed in statistical terms or not. In comparing the teaching of economics in Southeast Asia with the teaching of economics in the United States we have to bear in mind the differences in national income between the two countries and the differences in the rates of literacy, secondary education and general university education, and the effects that these differences have on salary levels and the costs of production of qualified people at different levels.

Dr Wharton points out that not one country in Southeast Asia has more than ten Ph.D.s in economics. If this is correct Malaya must be one of the most fortunate. If the expatriates who have been attracted to Malaya on a relatively long-term basis are included, Malaya has in fact just ten, all of them in Singapore. It might however be more accurate to reckon the figure as eight taking account of the fact that a number of the expatriates are not likely to remain permanently in Malaya.

In terms of Ph.D.s in economics per million of population, this is just over one per million. But if we reckon the proportion to the total number of graduates there would appear to be one Ph.D. in economics for approximately every thousand graduates in Malaya. No accurate figure for the number of graduates exists but as an order of magnitude this would probably not be far off the mark.

It is very doubtful whether the ratio of Ph.D.s in economics to the total number of graduates would be higher even in the United States than it is in Malaya. Moreover we must bear in mind that in other comparable ratios, such as the number of graduates per thousand people of secondary school education, the number of people of secondary school education per thousand literates and the number of literates per thousand of the population, Malaya would certainly fall far below the United States. These different ratios are related to one another for they are all indications of the extent to which capital has been invested in education and in any country where the rate of investment in the past has been low we should expect these ratios to be low.

If Malaya has a relatively high proportion of Ph.D.s in economics by this standard, this indicates that Malaya has already gone some way to make concession to a supposed urgent practical need.

Is there an urgent need for economic specialists at the Ph.D. level because of the fact that Malaya badly wants to raise its rate of economic development? We may concede that economic development and the teaching of economics have some relation to one another because it is generally agreed that economic development depends in part on a desire for material advance and a willingness to devote energy to it.¹ One of the ways in which such energy is directed is by furthering the

1. Cf. W. W. Rostow, *The Process of Economic Growth*, Oxford, clarendon Press, 1963.

study of economics which itself tends to increase the community's desire for further material advance, and also to improve the means of achieving this.

The available scarce resources of skilled personnel and training time have to be divided between extension activities, basic economic training, training in simple economic skills in business and agriculture, training in the economic aspects of business and government administration, training in economic research of a descriptive kind, and training in more advanced analytical research.

The suggestions put forward by Dr. Wharton imply that special effort should be directed to focussing economic effort on the highest levels of analytical research at least to a greater extent than is now done.

The point at issue is whether this would be a waste of scarce resources if the general level of education and the general level of economic education were not simultaneously increased in the same proportion. If Dr. Wharton means to argue that a higher proportion of the resources of underdeveloped countries should be devoted to education in general including research into the appropriate types of education that are required, there would be no need to disagree with him. Malinvestment in education is possible, like malinvestment in any other type of capital formation, and unless there is adequate research the likelihood of malinvestment may be rather greater in education than elsewhere because the market judges such investment only slowly and indirectly. But the yield from education is normally so high that (unlike Dr. Benham²) I should feel fully justified in recommending almost any underdeveloped country to increase its appropriation for this purpose.

Concentrating this appropriation on high grade analytical economic research is another matter. The fad of misuse of econometric techniques to which Dr. Wharton refers is not a phenomenon that can be ignored or treated as of minor significance. Any attempt to press advanced analysis at the expense of more general economic education of the public is likely to lead to the spinning of economic cobwebs which fail to influence policy, while the actual policy makers are actuated by the stale clichés of Marxist ideology and by demagoguery, directed against most of the effective agents of economic development.

If economics is to advance in underdeveloped countries there must be a continual pushing back of the frontiers of knowledge at the same time as the extension of awareness of economic ideas is propagated. On this there need be no disagreement with Dr. Wharton. The frontiers of knowledge however are intensive as well as extensive and in most underdeveloped countries there is a pathetic ignorance of many facts which are readily accessible in more developed countries. It is much more important that we should have more hundreds of people who understand what a bank rate is and who realise that both the average level and the dispersion of incomes in the country are significant, than that we should increase the number of people who can build effective economic models or calculate consumption and production functions. The more general awareness of economics we have, the more will these advanced analytical techniques develop of their own accord by the ordinary processes of competitive pressure.

The relation between a supply of trained economists and economic development is not a simple one of cause and effect. A certain degree of economic sophistication, and a willingness to modify institutions in accordance with material needs, are necessary conditions for economic growth. These conditions have, historically, favoured the growth of economics and other forms of applied science, wherever rapid growth was taking place. The immediate cause of this is the need to explain and organise new techniques of business, credit expansion,

2. F. C. Benham "Education and Economic Development in the Under-Developed Countries" *International Affairs*, Vol. 35, No. 2, April 1959.

monetary control and the like, and also an intellectual climate favourable to new practical thought.

The growth of economics itself of course helps to foster the attitude that stimulates material advance. When financial ministers and senior civil servants are operating in a context of sophisticated reviews and an expert public opinion, they need and can use the advanced and intricate models which, by then, the economists have developed. A minister who needs to justify unpopular measures by the fiction that the spendthrift policies of a former Government have left the nation in debt has hardly the political freedom of action in which refined calculations can influence policy. Even the United States agricultural price support policy indicates that there are areas of economic policy in which the sophistication of the agricultural econometrists has little practical application.

Linear programming could of course be a technique for dictators who were all-powerful and public-spirited, and who wished also to be all-wise. It is doubtful whether these conditions obtain in any underdeveloped countries; not even perhaps in the military dictatorships which are becoming as fashionable in underdeveloped countries as econometrics is said to be in the United States.

Generally a moderate increase in the application of practical reason in economic policy is all that can be expected. If there are enough economists around, it may be possible to prevent the imitation of steel mills or automatic factories from other countries where scale of operations, relative prices of factors and the pattern of growth are radically different. This will be done by widespread and deep knowledge of certain basic economic truths, and a strong desire to do things with economy. The calculation of production functions, though it would have some advantages in increased confidence and accuracy, would very probably increase the difficulties of communication; and it would enormously increase costs by using up very scarce resources.

By now it is well known among economists that the Duesenberry effect³ in underdeveloped countries operates not only on consumption standards but on production techniques and social organisation. But we are apt to overlook one important field in which it seriously interferes with growth, namely in our own academic organisations, where powerful institutional factors reinforce the effects of imitation in a rapidly shrinking world.

The brave new automatic factory is likely to be imitated in conditions in which competition is not keen enough to enforce attention to the economic realities. The local manager of an overseas firm is likely to want to show that in spite of being exiled to Singapore he still knows how to run a "modern" factory. Inventive adaptation will begin only when he is subjected to economic pressure that outweighs the desire to keep up with the latest elsewhere.

What are the conditions in academic work which hamper imitation and encourage invention? Academic work does not exist only to further economic development but has its own independent life and values.

When academic institutions are subjected to economic pressure this does not normally lead to inventiveness but merely to a decline in the quality of the work done. It can be argued however that in many underdeveloped countries there is too much pressure of imitation of what is done in more developed countries,

3. Cf. J. S. Duesenberry *Income, Saving and the Theory of Consumer Behaviour*, Harvard University Press, 1949 pp. 17 — 68; Joan Robinson, *The Accumulation of Capital*, London, Macmillan, 1956, p. 251; R. Nurkse *Problems of Capital Formation in Underdeveloped Areas*, New York, Oxford University Press, 1953 pp. 63 ff.

where the available factors of production are different, and too little pressure to further the genuine work of a university, which is the advancement of knowledge.

The reason for this is that many of the institutional pressures operate to accentuate the importance of the outward forms of new knowledge and to diminish the importance of knowledge as a quality of human beings. The universities in underdeveloped countries, if they remain universities at all, tend to become institutions which try to produce graduates as similar as possible to the graduates of universities in developed countries. Usually the selected developed countries are not those which are like the underdeveloped country in any relevant respects, but rather those with close historical associations, such as colonial rule or military alliance.

At the same time an attempt is made to produce research papers which are as similar as possible to the research papers in more developed countries, without regard to the question whether such research papers are the best instrument for furthering knowledge in the country concerned. It could be argued that it is more important for scholars in developed countries to give some of their services to the aspiring journals (such as this one) in underdeveloped countries, rather than for scholars in underdeveloped countries to contribute to the edification of the scholars of the United States or the United Kingdom.

The professional standing (and hence the salary) of a scholar in any underdeveloped country largely depends on the impact that he makes by his research papers, or by the capacity of his graduates to perform the same tasks as those of graduates in more developed countries. Hence this becomes the criterion of whether the scholar does his work well or not. In effect however this has very little relevance to the question whether he is succeeding in promoting, within the country in which he works, the same kind of intellectual excitement and the same application of abstract sophistication to the practical problems of life as is found at a different level and with different resources in the more developed countries.

It can be argued that the intellectual life of India for example is mainly focussed at the present time in the extension work that is being done in the villages, and in the attempts to assess and interpret this work for the benefit of wider and deeper training of extension workers, and not in the universities where the learning of the West is being parodied.

The fault in all this hardly lies in the underdeveloped countries themselves. It is very natural that a scholar in any underdeveloped country should aspire to imitate the best that he can find in more developed countries. Only the exceptional individual will realise that to apply the cultural phenomena that are transforming economic systems elsewhere to his own country involves quite radical changes in method of organisation and presentation of data.

The people who are at fault are those from more developed countries who regard underdeveloped countries as places in which to acquire knowledge of a different kind of social or economic organisation, or, for that matter, a different kind of fauna or flora, rather than regarding them as places in which there are people who badly need help.

The help that is required is stimulation of the attitude to knowledge and to its application which will generate rapid economic growth. It is no more reasonable to expect the forms of knowledge to be unaffected by the level of national income and the prevalence of literacy than to expect the forms of factory organisation to be unaffected by the level of national income and the scale of the market.

It is important to have academic standards which are high, if by this is meant an unwillingness to accept second rate levels of performance in relation to the resources available. The level at which research begins depends on the extent of the information available and the number of people available, at any given level of learning, in relation to all the various needs which these people have to meet. Economists who regard the design of factories or housing in imitation of the West as evidence that local business is imitative and not creative are ready to accept imitation of the standards of overseas universities as a mark of the highest virtue. The appropriate engineering technique for a country where labour is cheap, capital scarce, and the market restricted, is different from the appropriate engineering technique in a modern Western country. It is not the same as the appropriate technique that was devised in the early years of the nineteenth century because the availability of libraries (in which new knowledge can be found more cheaply than it could be found by original research) is a relevant new fact. But the information in the libraries is only a part of the necessary technique for finding out about the local situation. How much one should spend of one's limited resources of money and talent in using the libraries and other techniques and how much one should spend in observation by less sophisticated methods depends on local resources every bit as much as the appropriate design of a housing estate does.

This would appear to suggest that it is undesirable to try to influence underdeveloped countries by indicating what is now fashionable elsewhere. There is no need to plead for any relaxation of the standards required when students from underdeveloped countries go abroad to get their Masters' or Doctors' degrees. What is required is not a relaxation of standards but if possible the designing of appropriate institutions through which such students can obtain access to the relevant parts of the technology of the country giving aid. The standard of excellence that should be aimed at is the standard attainable by the utmost effort of the people properly selected to undertake this study.

Far from regretting that in the University of Malaya the Department of Economics has not produced enough doctoral students I regret far more the lack of inventiveness which has prevented us departing much further from the type of academic organisation that is found in the United Kingdom. I regret also the fact that the structure of University education, which Malaya accepted at the time of the Carr-Saunders Commission, virtually compels us to attempt to produce both graduates and research papers which are more similar to those of the United Kingdom than the technical conditions of Malaya would appear to render appropriate. Further development in the University should retain a passion for excellence but combine it with a much greater desire to ensure that the excellence is appropriate to the technical conditions prevailing in Malaya.

A NOTE ON THE MONETARY CONTROVERSY IN MALAYA

BY T. BALOGH,

Fellow of Balliol College, Oxford

Colonial banking systems grew up to serve the needs of the metropolitan areas for the reliable and cheap supply of food and raw materials. These requirements could best be satisfied by keeping the colonial monetary unit absolutely stable and by developing a sound banking organisation which would at all times be safe. The former was achieved by the simple expedient of 100 per cent cover for the currency, the latter by establishing in the colonies branches of London-based banks¹ which were left free to invest their monies (partly obtained from the colonies which had no other safe outlets for their growing savings). Liquid assets of impeccable security were not easily available in these areas. The colonial governments were not encouraged to borrow at short term. The large expatriate companies financed themselves out of profits or by share issues in London. Thus the banks kept a large part of their assets in the Metropolis on the plea that suitable investment media for their reserves did not exist in the colonies.² Moreover they typically restricted the rest of their lending to 'liquid' or 'self-liquidating' purposes. In practice this meant the finance of exports of primary produce and imports of (British) manufactures.

But markets for primary products were (and remain) extremely unstable. Exclusive dependence on them therefore made their producers subject to violent and destructive fluctuations. Moreover the trend after the first War and again after 1951 was against primary products; changes of taste, the invention of alternative and often superior materials and, so far as products of the temperate and subtropical zones are concerned, rapid technical progress in the industrial importing nations all combine to make the future uncertain and, probably, sombre.

A diversification of production and more especially industrialisation is therefore the primary goal to be striven for — though not at the cost of maintaining exports but *as an alternative to underemployment*. The development of agriculture and especially of a food-base is in most cases essential if development in the key-propulsive sectors is not to end in a balance-of-payments debacle. The Chinese have lately shown what could be accomplished in the most difficult climatic, demographic and basic technical conditions. Anyone who disregards the threat of this example will do so at his peril, probably at an early date.

The emergent colonial territories have increasingly realised the need for some such policy. Their reaction to the mellifluous and rather hypocritical preachings

1. In the case of British colonies, with the experience of which this article is mainly concerned.

In certain British territories in the Caribbeans the branches were those of Canadian-and U.S.-based banks. But this was already a sign of weakening imperial monopoly.

2. When I had to investigate the financial affairs of a West Indian dependency where a British official expert had just refused to countenance the establishment of a central bank. I found that roughly half of the new savings had been exported.

of economists in the Metropolitan areas about the wonderful way in which the free market system confers its miraculous benefits to all was perhaps extreme. A number of authors from underdeveloped areas (and as many sympathisers elsewhere) have tried to show that the Metropolitan countries positively exploited their dependencies. I think that this is in most cases an exaggerated expression. What happened, especially in Malaya, was that the Metropolitan capitalists appropriated most of the benefits of the development they initiated and which would not otherwise have taken place. The fact that they did not even have to pay income tax and could rely on a practically unlimited supply of labour clinched their advantage.

The colonial banking system was a potent weapon in this armoury of imperial financial dominance. It riveted the existing distribution of resources in the colonies, however uneconomic it is *au fond*. It cheapened the finance of exports and imports and drew capital away from the colonies by providing an easy and safe way of investment in bank deposits which in turn were used to buy securities in the Metropolitan market.³ Thus even the scant savings which arose in the colonies were used to finance the Metropolis and the cost of domestic loans for industrial development soared towards the usury rate of the *sukh* and bazaar. The 100 per cent reserve requirement against banknotes served the same end. Alternative means of finance became difficult.

The difference between the comparative social and private costs widened, confirming the colonies in their status of hewers of wood and drawers of water. The vicious circle was closed. The scantiness of the budgetary means prevented the mass-education needed to enable the people to profit by industrial possibilities. Infant industries could not be started because the financial system favoured primary production. It fudged and falsified real comparative advantages. All this contrasts sharply with the country bankers in the United Kingdom and the United States in the eighteenth and nineteenth centuries who provided the basis of the industrial and agricultural revolution by undertaking local commitments. They and not the banking system of fully developed areas deserve study and imitation in poor underdeveloped areas.

Finally the system, by making all long-term expenditure dependent on long-term loans floated in London (or other Metropolitan centres), conferred on *private* financial interests, and especially on overseas banks operating in the Metropolis, an absolute veto power on policy decisions in dependent areas which they disapproved. Of this they made full use.⁴ It made any change in the system difficult for, as Sir Sydney Caine sagely points out,⁵ the "creditworthiness" of the colonial government became dependent on strictly maintaining the system. Incidentally, London was able to earn a handsome difference between the monies deposited in London for the currency funds and banks (including Government savings banks) and the long-term loans floated.

The system worked extremely badly since 1945. The liberalisation measures and the return to monetary policy as practically the only weapon of economic control resulted through dear money in vast losses for the poor areas who compulsorily invested their reserves in London in longish-term securities.⁶ The

3. The fact that there was no market in the colonies was a good excuse. But the fact that the banks did not have to invest in the colonies prevented the development of a capital market and the dependencies were bled of their savings.

4. For example, they prevented the establishment of a central bank in Ceylon in the 1930's.

5. 'Malayan Monetary Problems', *Malayan Economic Review*, III, 2, October 1958, p. 2.

6. In the case of Malta, for instance, this amounted at times to 20-25 per cent of the total.

much-vaunted safety of liquid assets provided by relying on investment in London did not help much.

It is obvious that with increasing political independence demands have been made for a drastic change in these one-sided arrangements. The British Government and the Bank of England could have gratified these legitimate demands by reorganising the Sterling Area as a cooperative-economic-Commonwealth in which the capital and technical know-how of the Metropolis and the resources in climate, natural reserves and manpower of the periphery would have been joined in a planned acceleration of economic development. I have discussed this matter elsewhere and will not repeat what I have said.⁷

So far as colonial banking development is concerned such cooperation would have entailed the organisation of strong central banks in the new Commonwealth countries (and also in the remaining colonies) capable of taking a hand in financing economic development. These central banks should cooperate with the Bank of England, reorganised in its turn to be able to perform the appropriate new functions. This would have had to include temporary accommodation to colonies to smooth out deficits in their balance of payments due to fluctuations in primary markets: a kind of 'Commonwealth Monetary Fund' which would enable the poorer and less developed areas to use their own resources for economic development without endangering currency stability.

A shining example was readily available in the Commonwealth of what can be done by a well-organised central bank in command of savings and capable, where needed, of competing with private banks and reducing any exorbitant claims, or of channelling funds to where they are most needed. The Commonwealth Bank of Australia has played an immense and beneficial role in the achievement of financial and economic independence in Australia. It helped, in circumstances not unlike those obtaining now in Malaya, in financing development and in protecting the interests of small primary producers. Its command over a large part of savings, through its control of the Commonwealth Savings Bank, ensured financial means for the former task. It also enabled the Central Bank to put pressure on the banking system because the inflow of savings deposits could be used to cut the cash basis of the banking system by not reinvesting them — though open market operations would have been impossible in the absence of a strong market. In contrast to the 100 per cent reserve system, the Commonwealth Bank, under superb leadership, prevented extreme fluctuations in the terms of trade and the volume of exports of Australia from having much, if any, influence on the even tenor of economic development and on full employment. A better example could not be chosen. If it had been followed new life would have been infused into the declining coherence of the late Empire.

The Bank of England was as determined to sacrifice British exports to the liberalisation of financial transactions as it was to keep the old colonial banking system in being. It wished to prevent as much as possible the use of accumulated sterling reserves of the Commonwealth for their economic development because in the new circumstances Britain would have been unable to meet the strain. As it was, the expansion of British exports lagged behind Germany and Japan despite the relative depression of British production and the virtual cessation of economic growth. Dear money became the rule. The Commonwealth did not benefit even by the relative recovery of 1958-59 and could not recoup their losses suffered in

7. *Fabian Colonial Essays*, London, 1959; and a Report on Banking and Finance in Jamaica (1959).

their London investments.⁸ And new borrowing remains as difficult and expensive as ever.

The first reaction of the Bank to demands for financial autonomy was to send out 'experts' to show the prematurity and rashness of these demands. From Jamaica to Africa they were trying to demonstrate that little could be gained and much lost by establishing a central bank. At most a relaxation of the 100 per cent rule was conceded. Currency boards were to be maintained. This case was so obviously bogus that it could not be maintained.

A second defence line was then established. Mostly the selfsame experts were sent out again to persuade the emergent dependencies that if they must have central banks,⁹ these must as closely as possible resemble currency boards and remain as restricted in their investment policy or supervisory powers over private banks operating in their territories.¹⁰ Suitable references to the need for sound money, the dangers of inflation and depreciation were combined in their reports with little homilies about the need for and advantages of preserving 'confidence' by refraining from attempting to do too much (if anything). As a serious contribution to the analysis of the economic and financial problems of these territories they were farcical. They did not show knowledge of modern economics. They were political documents in the sense that they did not set out clearly the preconceptions on which they were based or offer alternatives. This basic assumption was the preservation, or rather restoration, of London's position as a financial centre, without any conscious control to assist development and bring about a progressive equalisation of the fortunes of the various members of the Commonwealth, and thus give some meaning to that nebulous concept.

The *Report on the Establishment of a Central Bank in Malaya*¹¹ is one of this series and no exception in its character. In a report dedicated to the most fundamental problem of Malayan monetary and banking organisation one would expect an analysis of the contribution that structural reform could make to the acceleration of economic development. The problem of reserves in London and their financial fate must be dissected. The question of the degree of the probable instability of the balance of payments must be discussed in order to establish the minimum requirement for international reserves. Alternative ways of meeting this need would then have to be enquired into; should Malaya try to obtain credit lines at the International Monetary Fund or at the Bank of England in order to be able to mobilise the existing reserves for economic development? An analysis of the possible directions in which this new-found leeway might be used is needed to determine whether or not reasonable potentialities exist for accelerated development, the full exploitation of which, far from deterring foreign investors, would spur them on to increased help. After all Malaya is underdeveloped because, apart from tin and rubber, foreigners were in doubt about possible gainful employment of capital, and the domestic entrepreneurial class was deterred by institutional difficulties, mainly in the capital market and banking structure, from pursuing alternative possibilities.

The *Report* does no such thing. There is no quantitative analysis to support the dogmatic recommendations that:-

- (1) Only British Government securities should be held apart from sterling

8. The Government of Ghana made some caustic, if entirely justified, remarks on the failure of the trustees of these funds.

9. "You know it is a kind of prestige consideration and we must humour them."

10. "We can't have these chaps messing about with old-established British banks."

11. By Mr. G. M. Watson and Sir Sydney Caine, K.C.M.G.

deposits and bank acceptances¹² (and no dollar or Commonwealth securities);

- (2) A high proportion of sterling assets (and gold) be held;
- (3) Private banks should not come under the control of the Central Bank even in respect of their Malayan deposits;
- (4) The Central Bank should have no power to compete with private banks and force them to be reasonable;
- (5) The Central Bank should have practically no power to assist development (The Malayan Government securities held are restricted to \$M 300 million).

There is no attempt at relating these rules to the balance of payments, or investigating how far the export of capital through the commercial banks, the likelihood of which is indicated on the basis of Annex "A" but which cannot be proven on the evidence of the material supplied,¹³ has harassed Malaya and how it could be stopped.

It is rather difficult to understand how such a report could have been submitted, and even more, how it came to be accepted.

Sir Sydney's defence of his effort against some mild criticism is no improvement. It belongs to those almost theological exercises by which erstwhile dependencies are assured of the benevolence of the Imperial system.¹⁴ In the analysis of Malayan economic development¹⁵ there is not a whisper of the question whether and how far a diversification of the economy could and should be stimulated. There is no differentiation between the economic effects of internal and external loans,¹⁶ nor of the effects on the virtual conferment of veto power of a Malayan economic and financial policy to London financial circles.¹⁷ The fact that banking funds were made 'available' from London¹⁸ was no advantage: it is clear that *Malayan* deposits were placed in *London* and not *vice versa*. Moreover the banking system, as I have explained above, *positively discouraged* Malayan diversified domestic economic development, and the lack of diversification was then used as an argument against making the means available to achieve it.

I would agree with Sir Sydney about the limited powers of a Central Bank — *in England*. That is the reason why I have steadily opposed the propaganda emanating from the London School of Economics in favour of stripping ourselves of all other weapons of control in the economic armoury. The jerks and jolts, combined with the slowing down of the growth of the British economy since 1951, in a situation when the terms of trade steadily improved, testify to the ineffectualness and inappropriateness of the policy so vociferously advocated by Sir Sydney and his colleagues.

12. This has been commented on by Mr. Sherwood in "The Watson-Caine Report on the Establishment of a Central Bank in Malaya", *Malayan Economic Review*, II, 1, April, 1957.

13. The authors might at least have thought it obligatory to give a short statistical abstract of currency, banking and balance of payments for 1938 and since the War, suitably prepared.

14. Another of those pathetic efforts which convince only the writer is a contribution to the United Nations Association (UK) Conference on the Financing the Development of Underdeveloped Countries of the Colonial Office spokesman. I have dealt with this at length elsewhere: "Those Sterling Balances", *Venture*, March 1954.

15. Sir Sydney Caine, "Malayan Monetary Problems", *Malayan Economic Review*, III, 2, October 1958, p. 26.

16. *Ibid.*, p. 28.

17. *Ibid.*, p. 28.

18. As Sir Sydney asserts, *ibid.*, p. 28.

In the context of an emergent underdeveloped country, however, the creation of a central bank in complete control of the savings bank system and with power over the commercial banks can, in conjunction with a development fund under its control, *make that (relatively small) difference which separates continued internal stagnation from self-sustaining economic growth*. It is significant that in most erstwhile dependencies substantial expansion on a broad front was only attained after liberation from British financial control. That this inevitably weakened British influence was the consequence of the policies of those who pay most assiduous lip-service to the 'ideal of Commonwealth'.

Still, the Malayan Central Bank has been established. It was fortunate in obtaining the services of a Head who was reared in the great school of the Australian tradition. It is therefore to be hoped that the changes in the constitution of the Bank, which are overdue if Malayan economic development is to meet the challenge of totalitarian planning, will be made in due course.

The Watson-Caine Report will then sink back into well-deserved oblivion. Until then it will be a quaint sign of the invaluable help which *laissez-faire* economists give — albeit unconsciously — to Communist challenge.

COMPANY PROFITS AND PRICES IN THE RUBBER INDUSTRY IN MALAYA, 1947-58*

BY RONALD MA

1. INTRODUCTION

This article analyses the relationship between public company profits in the rubber industry and the prices of rubber and its cost of production in the post-War years 1947 to 1958. Because of the time lag, averaging from nine to twelve months, between the publication of accounts and the periods to which they relate, prior estimates of company profits have to be made not only by rubber producers and shareholders but also by those who are concerned with national income and balance of payments studies or with the more mundane purpose of providing for the public revenue.

Table 1 shows the important contribution of the industry to the gross national output of Malaya, varying from 13% to 28% in 1949 to 1953. It is of interest to note the disproportionate increase in money incomes generated in the industry,¹ compared with other sectors of the economy, in the boom years 1950 and 1951. Its contribution to total exports in the post-War years is even more marked, varying from 50% to 72%.² The effects of changes in the price of rubber on the trade balances of Malaya and the Federation are evident, particularly in the case of the former; the influence on Malaya's ability to pay for her imports is reflected in the movements in her terms of trade.

2. THE EFFECT OF PRICE MOVEMENTS ON COMPANY PROFITS

The price of rubber³ fluctuated between 30 cents and 45 cents per pound in 1947 to 1949. The devaluation of the sterling led to increased demand, particularly in the United States, and there was a rising trend in 1950 which was strengthened by purchases by mainland China before the embargo was enforced. The third quarter of 1950 witnessed a sharp increase in the price level, which reached its peak — over \$2.00 per pound — in the first quarter of 1951. A main contributing factor was the United States' purchases for strategic stock-piling on account of the Korean War. Demand slackened in the following years and

* I have made use of P. T. Bauer, *The Rubber Industry* (London, Longmans, Green & Co. Ltd., 1948) to supply the economic background to the above analysis. I am also indebted to Dr. You Poh Seng for his constructive comments.

All numbered tables are included in Appendix A and charts in Appendix B. In all tables the sign .. denotes 'not available'.

1. In terms of employment, about 45% of the labour force in the Federation of Malaya (including government employees) are engaged in the rubber industry. See Federation of Malaya, *Annual Report*, (Kuala Lumpur, Government Printer), 1957, p. 44.

2. Malaya owes her position as the largest dollar-earner in the Commonwealth to rubber and tin. Her economy is therefore sensitive to the prosperity of the automobile industry, that key indicator of economic health in the United States, and the development of synthetic rubber.

3. Singapore, Department of Statistics, *Malayan Statistics: Monthly Digest of Economic and Social Statistics*, (Singapore, Government Printer), various years. The prices are brokers' monthly average prices of ribbed smoked sheet rubber, International 1, f.o.b. in bales.

prices fell steadily, reaching 55 cents per pound in the early months of 1954. For various reasons, such as the replenishment of stocks by manufacturers and the high level of industrial activity in consuming countries, this trend was reversed in the latter half of the same year and monthly average prices rose to \$1.45 in the third quarter of the following year. The period from 1956 to the first half of 1958 again experienced falling prices on account of a mild recession in world trade. Its recovery, coupled with heavy bulk purchases by Russia and China, revived the market and by mid-1959 the price had risen to about \$1.00 per pound.

Short-term price fluctuations are sometimes more violent than changes in the annual price. Thus in 1950 the average price in the highest month was four times that in the lowest month, and in the other years the corresponding excess was often 50% or more.

Table 2 compares the trend of annual rubber prices with that of annual profits of some rubber companies.⁴ Since part of the changes in profits can be attributed to changes in the general price level during this period, the export average value index (1952=100) has been used to deflate the profit series in order to express profits at 1952 constant prices. A very substantial increase in real terms is evident in recent years, from an average of about 14 cents per pound in 1947-1949 to over 30 cents in 1955-1958.

In the discussion of price-profit relationship for rubber production, generally price movements are the determining factor, not only for profits but also for costs. However though the cost of production has no role in price-fixing, there is in Malaya a tendency for changes in cost to lag three months behind changes in price,⁵ with consequent effects on the profit trend. Thus in a period of rising prices profits tend to rise more steeply, as in 1950 and in 1955; and when prices fall the proportionate fall in profits is greater, as in 1952 and in 1953.⁶ The relationship between profit and cost and that between price, cost and profit will be considered in later sections in this article.

The movements between current prices and current profits in the post-War years are reproduced on the scatter diagram in Chart I. If we exclude 1951 from the series, since this was a year of abnormal conditions in the industry, the scatter points are seen to lie on a polynomial; this seems to conform to the relationship indicated above.

The curve shows that profits tend to vary in approximate proportion between a wide range of prices from about 60 cents to 90 cents, and rise more steeply above the latter point. When prices fall below 60 cents, the fall in profits is at first relatively moderate, but there is a point of inflection (at between 40 and 50 cents)

4. The profits data used in this article are the averages of the annual net profits per pound of rubber, after deducting depreciation and before tax, of some thirty quoted dollar companies. These are also referred to subsequently as unit profits. Appendix C explains how these are computed.

The profits in 1947 to 1949 have been understated by the amount of rehabilitation expenditure in those years. On a rough guess profits of some companies have been understated by about 50% in 1947, 20-30% in 1948 and 5-10% in 1949.

5. Since 1951 wage rates have been tied to the price of rubber according to a sliding scale related to the average price in the preceding three months.

6. It is also important, of course, to take account of the movements in the respective series over shorter periods than the year. Thus for 1951, for example, the annual price series was seen to have reached its highest point, whereas in fact the peak was attained at the beginning of the year, and monthly prices fell thereafter by about 30% over the year. Since costs continued to rise during the year, the proportionate increase in money profits was less pronounced than that in prices as compared with the previous year.

below which unit profits tend to fall faster than prices. If the curve is extended the break-even point would seem to lie around the price of 23 cents per pound of rubber.

The third-degree equation used for estimating company profits from the price of rubber is:—

$$Y = -13.05 + 0.6615X - 0.005477X^2 + 0.000031X^3,$$

where Y is annual unit profit and X annual unit price.⁷

3. THE COST OF PRODUCTION

The effects of changes in output or productivity on the cost of production depend to some extent on the components of cost. The total of all-in cost consists of the following items:

- (a) Expenditure incurred in the tapping, processing and despatch of rubber, export duty and cess, and expenditure on the upkeep and cultivation of the mature area,
- (b) A proportion of general charges⁸ which comprise estate general expenditure including depreciation, and head office and administrative expenses,
- (c) Freight, handling and selling charges.

Freight is normally not included as an expense, as the bulk of production is sold under f.o.b. contracts. Selling charges and agency fees, where incurred by the estates, are usually deducted direct by the agents from the proceeds. For all practical purposes therefore average all-in costs are identical with *ex* estate costs of production, including export duty and cess.

The following table gives an approximate picture of the relative size of these items in 1958:⁹

7. The standard error of estimate is 2.85 cents. Testing for goodness of fit, we find that P lies between 0.8 and 0.9, indicating a very good fit.

8. These general charges are apportioned in an arbitrary manner between mature and immature acres, often on the basis of half unit per immature acre and one unit per mature acre and per acre of clearings and replantings in their first year.

9. This table is based on the detailed cost data of five companies who supplied the information; there is little variation between companies.

P. T. Bauer, *op. cit.*, p. 271, gave figures of f.o.b. costs of 157 estates in 1940. The proportions are:

Collection, etc.	41
Upkeep and cultivation	17
Export duty	9
General charges including depreciation	33
Total cost	<u>100</u>

It is surprising to find these similarities, since the average f.o.b. cost in 1940 was only 14.7 cents per pound.

	<i>Cents per pound</i>	<i>Percentage</i>
Collection, processing and despatch	21	41
Upkeep and cultivation	6	11
Duty and cess	9	17
General expenditure	14	27
Depreciation	2	4
	<hr/>	<hr/>
Total cost excluding freight and selling*	52	100
	<hr/>	<hr/>

* The cost of freight and agency fees for consignments to London and New York are respectively 1¼ cents and 5¾ cents per pound.

The first two items which constitute 52% of total cost are mainly direct labour costs. Movements in the level of wages in the industry are set out in Table 3, where their influence on the cost of production is clearly shown.

Labour costs are also related to the efficiency of labour, but this has remained fairly stable over the period. The output per worker can only increase with efficiency of the tree, as there is little scope for mechanisation.¹⁰ In pre-War years the annual output per worker on estates, including tappers and factory workers, was slightly over one ton; in 1957 it was nearly double at 1.9 tons. Official statistics reveal that over the last twelve years productivity in the rubber industry has remained constant (though it is certain to increase in the immediate future, as more high-yielding trees are tapped) while labourers' wages have doubled.

THE EFFECT OF SIZE OF ESTATES ON COSTS

Three-fourths of the estate output are produced by about 600 European estates.¹¹ The relative distribution in 1957 of all European estates and of those owned by thirty-six "dollar companies"¹² is given below:—

<i>Size distribution</i> Acres	<i>597 European estates</i>		<i>36 dollar companies</i>	
	Number	Per cent	Number	Per cent
Under 1,000	154	26	5	14
1,000 to under 2,000	211	35	19	53
2,000 " " 3,000	98	17	2	} 33
3,000 " " 5,000	85	14	7	
5,000 and above	49	8	3	
	<hr/>	<hr/>	<hr/>	<hr/>
	597	100	36	100
	<hr/>	<hr/>	<hr/>	<hr/>

Sources: *Malaya, Rubber Statistics Handbook*, 1957, Table 3, p. 10; *Facts and Figures of Malayan Companies*, 1958, compiled and issued by Fraser & Co., Singapore.

10. Except in weeding, where mechanical methods are gradually replacing arsenite spraying.

11. There are over 1,800 Asian estates, under largely Chinese ownership, with an average size of about 400 acres.

12. These are a group of quoted public companies for which information relating to profits and production costs is available. Their estates constitute only a small section of all European estates, but similar information for the latter is not readily accessible. Relatively few of the companies' estates belong in the smallest size group; also some companies hold more than one estate.

It is clear that the modal size of estate lies between 1,000 and 2,000 acres, but it has been pointed out that as a productive unit this has little claim to the optimum size.¹³ There are not many economies of scale since the processes of collection and manufacture do not vary with output.¹⁴

An analysis of f.o.b. costs and nature acreages of 157 estates in 1940 shows a negative correlation of -0.12 and of 138 estates excluding those above 5,000 acres, of -0.17 ¹⁵ The corresponding correlation in 36 dollar companies in 1956 is 0.20 . The coefficients are statistically insignificant in all cases and may be attributed to random factors.

HIGH-YIELDING ACREAGE, PRODUCTIVITY AND COSTS

Of greater relevance to production costs than the absolute size of the estate is the acreage planted with mature high-yielding trees. The distribution in 1956 of old and new plantings in thirty-six dollar companies' estates is shown below.

	Thousand acres	Per cent
Old seedlings	39	50
Selected seedling:		
Mature	21	27
Immature	18	23
	<hr/> 78	<hr/> 100

The introduction of selected strains, whose average yields are twice as high as those from old trees, is the most important development affecting productivity at the present time.¹⁶ Table 4 suggests that productivity per acre varies directly with the proportion of mature high-yielding trees while the unit cost of production varies in inverse ratio. This is only partly confirmed by a further analysis. The correlation coefficient between output per acre and the proportion of high-yielding stocks is $+0.62$ which is significant and indicates a marked relationship. The correlation between each of these variables and unit costs are respectively -0.33 and -0.28 , which are not significant. The apparent relationship between productivity and costs fails to satisfy other statistical tests of significance and is therefore not proven.¹⁷

13. The detailed argument is contained in P. T. Bauer, *op.cit.*, p. 272.

14. It has often been advocated that an amalgamation of estates will lead to substantial economies, on the ground that large estates produce at lower costs. There is however no evidence to support the hypothesis. In any case, even if this could be assumed, it would be only an indication of increasing returns with size in individual estates and would beg the question whether large estates become efficient and have lower costs or efficient estates grow large.

15. P. T. Bauer, *op.cit.*

16. See *Rubber Statistics Handbook*, 1957, Table 25, p. 32. The annual yields from high-yielding material vary from 760 to 830 pounds per acre, those from unselected seedlings from 310 to 420 pounds. Yields may be increased by 30% or more with the use of chemical stimulants and they are also dependant on other factors, such as the density and age of trees and soil nutrition.

17. We divide the companies into two groups, those with under 40% of high-yielding acres and those with 40% and above, and find their respective mean costs to be 60.7 cents and 56.4 cents. On small-sample theory the significance of the difference between the means is not established. We then repeat the analysis and divide the companies into two groups with annual outputs below and above 500 pounds per acre. The respective mean costs are 61.8 cents and 57.0 cents; the difference again is not significant.

4. THE VOLUME OF OUTPUT

Before proceeding to consider the relationship between price, cost and profit, it may be useful to examine in the above context some of the theoretical implications in the role of the volume of output in the rubber industry.

THE EFFECT OF CHANGES IN PRICE ON OUTPUT

There are two views as to how production reacts to price changes. In a free competitive economy, output will increase to meet a strengthening of demand. It was also generally held at one time that low prices bring out the greatest native production in order to maintain money incomes.

In the post-War period, the price of rubber has been determined mainly by fluctuations in demand, and an inspection of the production figures does not reveal any close connection between the rubber price and the volume of output. For example, although prices were low in 1948-50, output was at its highest on account of the prolonged resting-period during the Occupation. Conversely, when the price of rubber reached its peak in 1951, estate output was only 84%, and total output, including smallholdings, was only 88%, of the corresponding outputs in 1948-50. This is probably explained by the intensive tapping in 1950, when prices were rising rapidly; furthermore there were the disruptive effects of the Emergency. At any rate, the role of supply has been a passive one. Because of the short-term inelasticity in supply, prices climbed steeply with the pressure of demand in 1950-51 and again in 1955. This confirms that, in contrast to the inter-war period when it was found necessary to operate a scheme of restricted production in order to maintain prices, there has been no excess capacity in the industry.

The lack of any relationship between price and estate output is shown in Table 5. The same table also brings out the fact that the proportionate annual changes in smallholders' production, though relatively slight, tend to move in the same direction as the price trend.¹⁸ Although the extensive replanting programme in the post-War years is an important reason for the inelasticity and fall in volume of estate production, the native output is basically more responsive to price changes. Partly because the smallholdings are not organised on a system of paid labour and partly on account of the existence of marginal productive and idle plots, the smallholders are often more ready to expand production. They also react to a fall in prices; the owners often leave their holdings to grow other crops or to work for wages on estates which have to maintain production to fulfil forward contracts or for other reasons.¹⁹

THE EFFECT OF AN INCREASE IN OUTPUT ON COSTS

Increased production leads to a reduction in costs in two ways. Fixed charges per unit of output fall in inverse ratio to the volume of production. The effect on variable costs, however, depends both on the capacity of the estate and the mode of remuneration of direct labour. If the increased output is produced by working above normal capacity, then the payment of overtime wages and bonuses or a fall in productivity (or both) will reduce savings. On the other hand, the unit cost of wages will diminish *pari passu* with an increase in output due to an increase in the productivity of workers paid at fixed daily or monthly rates. But sixty-five per cent of the total wage-bill is paid (mainly to tappers)

18. Should we adopt the convention of basing the proportionate change on the smaller of the two consecutive annual values, the elasticity of supply varies from +0.1 to +0.5 in most years.

19. For example, some estates are subsidiaries of users of rubber, such as tyre manufacturers.

on a piece-rate basis; unit costs will still fall as the rates usually vary inversely with the productivity of the surface area, but by a smaller amount. Costs will not be reduced, however, if production has been increased by tapping a larger area.

The relationship between costs and output can be briefly summarised:

- (a) If the increase in output is due to the tapping of high-yielding rubber, there will be a proportionate reduction per unit of output in fixed charges and in the wage-costs of workers paid at fixed-rates, and a smaller reduction with respect to workers paid at piece-rates.
- (b) If the increase in output is due to the tapping of a larger area, there will be no reduction in direct labour costs, but depreciation, amortisation, head office expenses and other fixed charges will be borne by a larger volume of output. Certain fixed charges, however, such as supervision costs tend to increase with the size of the plantation.
- (c) If marginal or sub-marginal plots²⁰ are tapped, the lower productivity of the tree is reflected in decreased efficiency of labour and higher field costs per unit.

5. THE RELATIONSHIP OF PROFITS TO PRODUCTION COSTS

For the group of companies under study, consisting as they do of high-cost producers, the cost of production is an important factor in determining profits, particularly in years when costs are relatively high. At the same time, we would expect to find less variability in this relationship than in a sample which includes medium and low-cost producers as well.

There is a marked difference in output between companies which is a function partly of size and partly of differences in productivity. The volume of output in its turn affects costs and indirectly unit profits.

A partial correlation analysis of unit profits and costs, with output held constant, of thirty-one companies in 1953 and thirty-two in 1956 gives the following coefficients, which are significant at the 5% level. The removal of the effects of variations in output has resulted in only a small increase in the cost-profit relationship.

	r_{pc}	$r_{pc,u}$
1953	-0.68	-0.70
1956	-0.39	-0.41

The regression equations of profits on costs and output are

1953	$P = 35.32 - 0.4927C + 0.0013U$
1956	$P = 52.97 - 0.4095C + 0.0018U$

The units are one cent for profits P, one cent for costs C and 1,000 pounds for output U.

The results of the analysis suggest that the influence of costs on profits is more marked in years when the former are high in relation to current rubber prices, as in 1953. But there is a further reason for the decreased importance of costs in 1956. Non-trading income from trade investments, government securi-

20. These may be plantations with poor soil or difficult terrain, but higher costs also obtain when immature or old trees are tapped.

ties and bank deposits increased over this period and were two to three times higher in 1956 compared to 1953; since this income is unrelated to production it weakens the causal relationship between costs and profits.²¹

The regression equations indicate that unit profits tend to increase with output, but the effect is negligible. The correlation between profits and output, taking costs into consideration, is positive in both years but not significant at +0.22 and +0.15 respectively.

It is surprising to find the correlation between costs and output positive, -0.17 and +0.12, in the two respective years. The coefficients in both years are insignificant and can be attributed to random factors, but the following comments may have some validity. They also illustrate an interesting economic aspect of the industry.

Since each firm is producing a homogeneous commodity, it is faced with a perfectly elastic individual demand curve. Theoretically, where there is a perfectly competitive market, firms will produce at the most efficient output where marginal cost is equal to average total cost and both are equal to marginal revenue or price. There are, however, obvious obstacles to the free entry of new firms in the rubber industry; in a sellers' market marginal revenue or price will be raised to a level above where marginal cost is equal to average total cost at its minimum point. In order to maximise total profits, the output of the existing firms will tend to expand until the cost of producing an additional unit is equal to its price. Such internal expansion is limited by the size of the estate, but output will nevertheless be maintained at a point where average total cost is rising and marginal cost greatly exceeds the former. Other things being equal, there will be a tendency for an increase in output to be associated with an increase in average cost, and this tendency is strengthened by the large ratio that variable costs bear to fixed costs in rubber production.

6. THE TRENDS OF PRICES, COSTS AND PROFITS

Some of the more general conclusions in the preceeding sections may be summarised as follows:

(1) A marked positive correlation exists between annual prices and annual company profits per pound of rubber in the period 1947 to 1958.

(2) There is an inverse and significant relationship between unit costs and profits of individual companies, but this relationship is less pronounced in later years.

(3) The correlation between output and unit profits and that between output and unit costs of individual companies are positive but statistically insignificant and may be attributed to random factors.

We have now to consider briefly the relationship of annual unit prices, company profits and production costs in this period. It may be concluded from the experience of individual companies that the volume of total output has negligible effect on the average level of costs or profits; at any rate, there was little variation in total output during the period. Chart II shows the trends of annual prices, profits and cost of production per pound of rubber plotted on

21. Investment income (gross) varies from 3% to 30% of the net profits in 1957 of ten companies whose accounts have been examined. Holding companies and companies whose income is derived mainly from investments have been excluded from the analysis.

semi-logarithmic graph to compare proportionate changes in the three series.²² The similarity between rubber prices and profits is already evident in Chart I, but that between prices and production costs may be less expected. Prices influence the level of costs in two ways. Since 1951 wages in the industry have been tied to the average price of rubber in the preceding three months. Further, rubber prices influence general economic activity and the general price level, and thus have a secondary effect on costs.

The results of a correlation analysis of the inter-relationship between the three variables are shown below:

Variables	Correlation	
	Zero order	First order
Price and profits	+0.98	+0.97
Costs and profits	+0.66	-0.48
Price and costs	+0.75	—

The effect of holding costs constant has not resulted in an increase in the very marked price-profit relationship. This is surprising, in view of the positive correlation between the rubber price and costs, but it may be explained, in large part, by the time lag before rubber price movements influence the level of wages.

The observed relationship between the cost and profit trends is shown to be attributable to variations in the rubber price. The partial correlation coefficient indicates that, with *given* prices, costs and profits vary in inverse ratio. Though the coefficient is statistically insignificant, this hypothesis is consistent with the cost-profit relationship between companies analysed in a previous section.

Two factors which may counterbalance one another will affect the future position. There is the tendency for productivity to increase as more high-yielding trees mature and are brought into production and, secondly, for wage-costs to keep in step with the rising prosperity in the country.

22. A further aspect of the inter-relationship between the three annual series, that of residual costs, is examined in Appendix D.

APPENDIX A

TABLE 1. CONTRIBUTION OF THE RUBBER INDUSTRY TO THE NATIONAL ECONOMY OF MALAYA, 1947-58

	Average annual rubber price, R.S.S.1	Gross national income at factor cost, Malaya	Gross income from rubber as % of G.N.I.	Exports (f.o.b.)		Balance of trade		Terms of trade	
				Federation	Rubber as % of total	Malaya	Federation	Malaya	Federation
	(cts. /lb.)	(\$mn.)	(%)	(\$mn.)	(%)	(\$mn.)	(\$mn.)	(1952=100)	(1952=100)
1947	37.3	..	..	835	70.3	- 45	225	154	154
1948	42.2	..	..	1,116	60.9	- 27	270	146	146
1949	38.2	3,335	12.6	1,179	50.0	-176	253	150	150
1950	108.2	5,080	27.6	2,608	69.4	1,098	1,297	100	100
1951	169.6	7,145	28.3	3,379	72.3	1,318	1,511	82	82
1952	96.1	5,975	18.1	2,134	60.3	41	475	100	100
1953	67.4	5,395	13.3	1,598	56.1	-218	147	117	117
1954	67.3	..	..	1,625	55.6	- 30	306	113	113
1955	114.2	..	..	2,370	66.8	334	827	90	90
1956	96.8	..	..	2,262	60.9	14	511	97	97
1957	88.8	..	..	2,180	59.8	-238	365	105	105
1958	80.2	..	..	1,882	63.6	-368	225	111	111

Notes : (a) The annual rubber prices are averages of buyers' mid-day f.o.b. Singapore prices except for the years 1947 and 1958, for which quotations are for spot rubber and brokers' monthly average prices respectively. The grade is ribbed smoked sheet, International 1.

(b) The gross income from rubber is the total estimated value of output less estimated costs of production incurred outside the industry, that is, it is the sum of wages, interest, rent and gross profits earned in the industry.

(c) The Malayan trade figures exclude trade between Singapore and Federation of Malaya.

(d) The Federation trade figures include trade with Singapore.

(e) The terms of trade annual indices, which are geometric averages of quarterly indices, measure the relative changes in the values of exports and imports compared with 1952 values. The indices for years prior to 1952 are based on 1938 values and have been spliced on to the 1952-year base to maintain continuity in the index series. No adjustments have been made to correct the bias on account of changes in the volume and composition of trade between the two base years.

Sources : (a) Rubber prices — Federation of Malaya, Department of Statistics, *Rubber Statistics Handbook*, (Kuala Lumpur, Government Printer), 1957, Table 44, p. 53.

(b) Gross national income — International Bank for Reconstruction and Development, *The Economic Development of Malaya*, Baltimore, The Johns Hopkins Press, 1955, Table 14, p. 690.

(c) Malayan trade — Singapore, Department of Statistics, *Malayan Statistics: Monthly Digest of Economic and Social Statistics*, (Singapore, Government Printer), various years.

(d) Federation trade — Federation of Malaya, Department of Statistics, *Monthly Statistical Bulletin of Federation of Malaya*, (Kuala Lumpur, Government Printer), various years.

TABLE 2. RUBBER PRICES AND PROFITS OF DOLLAR COMPANIES
IN MALAYA AT CURRENT AND 1952 PRICES, 1947-58

	Average annual rubber price, R.S.S. 1	Company profits at current prices	Export average value index, Malaya	Company profits at 1952 prices
	(cts./lb.)	(cts./lb.)	(1952 = 100)	(cts./lb.)
1947	37.3	7.1	46	15.5
1948	42.2	6.6	53	12.4
1949	38.2	6.9	52	13.3
1950	108.2	37.2	88	42.1
1951	169.6	53.3	137	39.0
1952	96.1	23.6	100	23.6
1953	67.4	10.8	79	13.6
1954	67.3	17.4	74	23.4
1955	114.2	34.1	96	35.7
1956	96.8	32.1	88	36.6
1957	88.8	24.0	84	28.5
1958	80.2	22.8	76	29.9

Notes : The export average value annual indices are geometric averages of quarterly indices. The indices for years prior to 1952 are based on 1938 export values and have been spliced on to the 1952-year base to maintain continuity in the index series. No adjustments have been made to correct the bias on account of changes in the volume and composition of exports between the two base years.

Sources : (a) Company profits — Based on data recorded in *Facts and Figures of Malayan Companies*, compiled and issued by Fraser & Co., Singapore, various years.
(b) Export average value index — Singapore, *Malayan Statistics: Monthly Digest of Economic and Social Statistics*, various years.

TABLE 3. INDICES OF ALL-IN PRODUCTION COSTS AND LABOURERS' WAGES IN RUBBER ESTATES IN MALAYA, 1947-58

	All-in production costs	Labourers' wages
	(1947 = 100)	
1947	100	100
1948	110	100
1949	109	100
1950	145	150
1951	235	236
1952	240	202
1953	201	191
1954	186	162
1955	222	179
1956	229	218
1957	201	227
1958	181	209

Notes : (a) Average all-in production costs of dollar companies in 1947 were 26.4 cents per pound. Appendix C explains how annual all-in costs have been computed.

(b) A wages index based on the average daily rate in 1947 (\$1.10 per day = 100) of unskilled field workers, mainly weeders who form 23% of the total labour force, was published for 1951 to 1953; an attempt has been made in the above table to extend the series. Indices for earlier years are rough estimates. Official wages statistics in later years are based on the average wages of labourers in a 15% sample of estates of 100 acres and above (with a higher coverage for large estates).

(c) Wage movements in the different grades of workers often took place at a different pace, particularly in years of large changes in the price of rubber as in 1953 and 1955. The average rates of pay of daily-rated tappers in 1953 showed a decrease of -28%, and in 1955 an increase of +20%, compared with the respective preceding years.

(d) About nine-tenths of the tappers are paid at piece-rates; on the other hand, most weeders and factory workers are paid at daily rates. The numbers and average wages in the different grades of workers in July 1957 are given below:

	Number of workers		Average daily rates	Average days worked	Average monthly earnings
	('000)	(Per cent)	(Cents)		(\$)
Foremen	10	3	3.55	27½	117
Tappers	179	65	2.80	24½	81
Weeders	64	23	2.50	23	59
Arsenite sprayers	2	1	3.30	22	95
Factory workers	13	5	3.10	27	99
Others	9	3			
	<hr/> 277	<hr/> 100			

Sources : (a) Federation of Malaya, *Annual Reports*, (Kuala Lumpur, Government Printer), various years.

(b) Federation of Malaya, *Annual Reports of the Labour Department*, (Kuala Lumpur, Government Printer), various years.

TABLE 4. AVERAGE OUTPUT PER ACRE AND UNIT COSTS BY PROPORTION OF MATURE HIGH-YIELDING ACREAGE OF THIRTY-TWO DOLLAR COMPANIES IN 1956

Proportion of mature high-yielding acres to total mature acres	Number of companies	Average annual output per acre		Average unit all-in costs	
		Unweighted	Weighted	Unweighted	Weighted
		('000 pounds)		(Cents per lb.)	
Under 10%	1	445	445	57.5	57.5
10% to under 20%	6	425	420	63.1	63.2
20% " " 40%	14	524	524	60.0	60.0
40% " " 80%	9	653	651	57.6	57.8
80% and above	2	879	878	51.3	50.5

Note : Average output and average costs weighted by percentages of mature high-yielding acres in individual companies indicate that there is little difference when variations between companies within a group are taken into account.

Source : Based on data recorded in *Facts and Figures of Malayan Companies, 1957*.

TABLE 5. ANNUAL PERCENTAGE CHANGES ON PREVIOUS YEARS' FIGURES IN THE PRICE AND IN THE MALAYAN AND WORLD OUTPUT OF RUBBER, 1948-58

	Average annual rubber price, R.S.S. 1	Malayan output		Total world output
		Estates	Smallholdings	
1948	+ 13.1	+11.9	+ 3.0	+21.0
1949	- 9.5	- 0.7	- 8.1	- 2.3
1950	+183.2	- 6.0	+17.2	+24.8
1951	+ 56.7	-12.7	-12.9	+ 1.3
1952	- 43.3	+ 4.0	-12.3	- 5.0
1953	- 29.9	0.0	- 4.1	- 3.5
1954	0.0	+ 1.2	+ 3.6	+ 4.6
1955	+ 69.7	+ 2.0	+18.7	+ 6.1
1956	- 15.2	- 0.3	- 4.2	- 1.6
1957	- 8.3	+ 4.8	- 2.0	+ 0.8
1958	- 9.7	+ 6.0	+ 1.4	..

Source : Secretariat of the International Rubber Study Group, *Rubber Statistical Bulletin*, Vol. 13, No. 7, April 1959, Table 2, p. 3.

APPENDIX B

Company
Profits
in cents
per pound

60

50

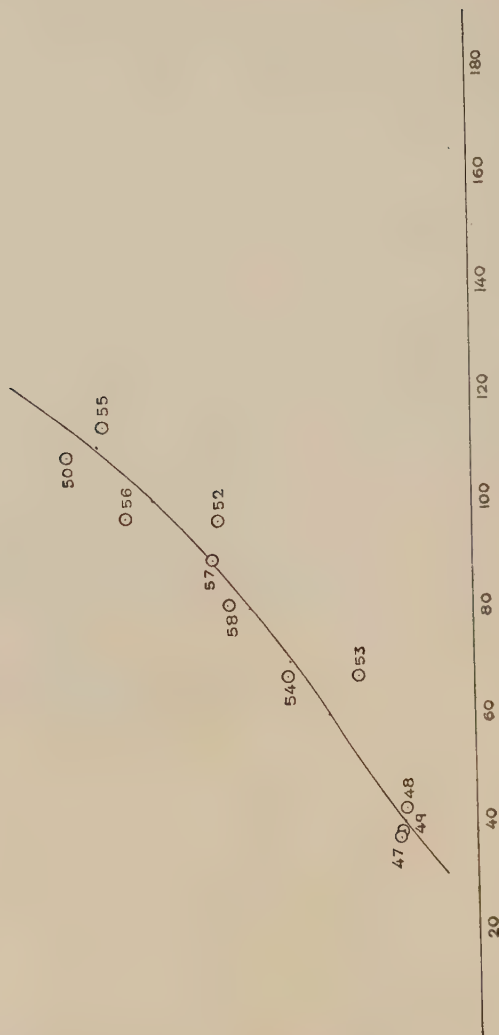
40

30

20

10

51



Rubber Prices
(in cents per pound)

CENTS PER POUND

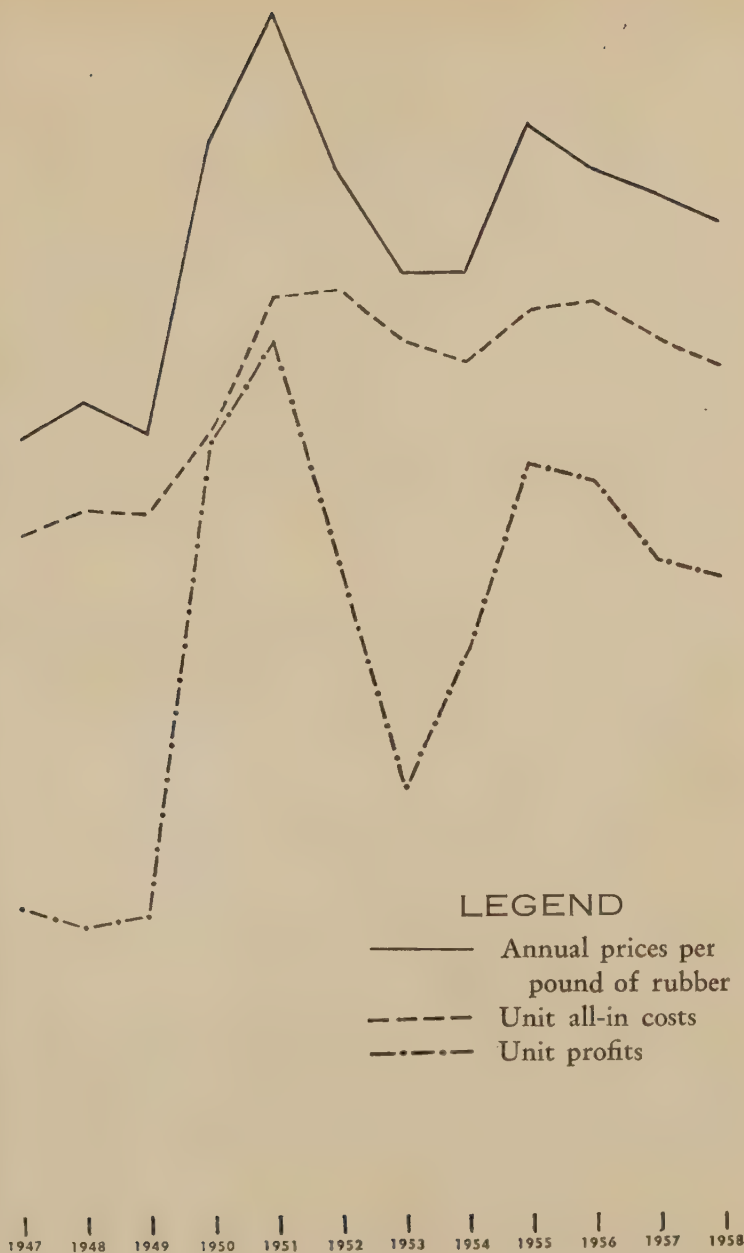


CHART II. TRENDS OF PRICES, COSTS AND PROFITS PER POUND OF RUBBER, 1947-58 (SEMI-LOGARITHMIC SCALE.)

APPENDIX C

THE COMPUTATION OF ANNUAL UNIT PROFITS AND PRODUCTION COSTS

The annual unit profit and all-in cost series in the text are based on the financial and cost experience of some thirty dollar companies recorded in *Facts and Figures of Malayan Companies*, an annual publication compiled and issued by Fraser & Co. The term dollar companies refers to quoted public rubber companies with head offices in Malaya, as contrasted with sterling companies whose head offices are in the United Kingdom. It should be emphasized that these companies do not constitute a random sample. The consideration governing their selection is expediency; their financial and production data over a number of years are readily available in the above-mentioned publication. Though their experience cannot be taken as representative in all respects of the Malayan rubber industry, nevertheless they constitute an important section of the company population in it and in the share market in Malaya.

Generally, the composition of the sample is a stable one, but for some companies information is not available for certain years. Thus there is a changing number of companies included in our calculations each year. Theoretically this leads to defect in the comparability of the annual figures, but there is some evidence to believe that there has not been a distortion of the general trend.

A special difficulty is caused by the varying end-year dates adopted by companies for their accounts:—

Year ending 31st March	—	4	companies
" " 30th June	—	7	"
" " 30th September	—	4	"
" " 31st December	—	10	"
" " other dates	—	6	"

Where the financial year differs from the calendar year, the profit and production figures relating to the former have been apportioned on a time basis, though this procedure may result in misrepresenting fluctuations between one year and another. Companies whose years end on 31st December are more suitable for aggregate analysis, and the ten companies have been included in the average figures for all years, except for 1947 (seven companies), 1952 and 1954 (nine), and 1958 (eight).

The annual profit figures in the text are averages, weighted by output, of the profits per pound of rubber, of companies whose numbers in each year are given in the following table. The annual all-in cost series is similarly constructed. The table compares our profit and cost series with corresponding series based on nine companies whose financial years end on 31st December. It would appear that the trends of profits and costs in the two groups of companies do not differ appreciably.

TABLE — AVERAGE UNIT PROFITS AND ALL-IN COSTS IN SERIES
GIVEN IN TEXT AND IN NINE COMPANIES WHOSE YEARS END ON
31st DECEMBER

	Series in text			Series based on nine companies	
	Number of companies	Average profits	Average all-in costs	Average profits	Average all-in costs
		(Cents per pound)		(Cents per pound)	
1947	21	7.1	26.4	..	..
1948	19	6.6	29.1	7.4	28.0
1949	23	6.9	28.7	5.6	28.0
1950	31	37.2	38.2	35.4	35.1
1951	30	53.3	62.0	61.4	59.1
1952	29	23.6	63.4	23.8	..
1953	31	10.8	53.2	11.1	48.5
1954	28	17.4	49.1	17.4	..
1955	30	34.1	58.7	38.3	55.4
1956	29	32.1	60.5	29.1	57.3
1957	21	24.0	53.1	23.3	51.0
1958	8	22.8	47.9	..	..

Notes : (a) The nine companies form part of the larger group of companies in the text series. Production cost figures for a few of the former companies are not available for 1952 and 1954.

(b) 1958 profit and cost average figures in the text series are based on eight companies whose financial years end on 31st December.

APPENDIX D

THE FLUCTUATIONS IN RESIDUAL COSTS

The changes in the volume of unit all-in cost and residual costs are illustrated in the table below. The fluctuations in the latter, which comprise mainly head office expenses and depreciation not charged to cost of production nor capitalised, are considerable in certain years. As all figures in the table are subject to large margins of sampling and averaging errors no particular significance can be attached to small differences, but these residuals in 1950, 1951 and 1955 amount to respectively 33 cents, 54 cents and 21 cents per pound and merit attention. The volume of output in 1951 and 1955 is lower than the average output in the period, but this is a minor contributory factor. These were all years of prosperity and a partial explanation must lie in the granting of bonuses to staff (which might range from six to twelve months' salary) and increased managers' commissions

TABLE — RUBBER PRICES AND PROFITS, ALL-IN PRODUCTION COSTS
OF DOLLAR COMPANIES IN MALAYA, 1947-58

	Average rubber price, R.S.S. 1	All-in production costs	Price less all-in costs	Company profits (net)	Residual Costs
(Cents per pound)					
1947	37.3	26.4	10.9	7.1	3.8
1948	42.2	29.1	13.1	6.6	6.5
1949	38.2	28.7	9.5	6.9	2.6
1950	108.2	38.2	70.0	37.2	32.8
1951	169.6	62.0	107.6	53.3	54.3
1952	96.1	63.4	32.7	23.6	9.1
1953	67.4	53.2	14.2	10.8	3.4
1954	67.3	49.1	18.2	17.4	0.8
1955	114.2	58.7	55.5	34.1	21.4
1956	96.8	60.5	36.3	32.1	4.2
1957	88.8	53.1	35.7	24.0	11.7
1958	80.2	47.9	32.3	22.8	9.5

and directors' fees. The fluctuations in directors' fees and emoluments paid by three companies are shown below (in the form of index numbers based on the average of 1947-49 = 100):

<i>Index number of directors' fees (1947-49 = 100)</i>									
	Annual output (000 lb.)	Average 1947-49	1950	1951	Average 1952-54	1955	1956	1957	1958
Company A	500	100	100	200	150	200	200	170	310
Company B	1,000	100	300	440	260	500	440	440	440
Company C	1,500	100	460	1,000	90	310	240	310	170

Source: Annual accounts of three companies who supplied the information.

There seems little justification, in a developing economy with scarce resources, for windfall profits which are not rewards accruing to land, labour, capital or entrepreneurship. The average long-term rate of profit, taking good years with the bad, must of necessity be higher than elsewhere because of the payment for uncertainty bearing. Unfortunately, no objective study has been made of the level of profits that will induce the planter to reinvest. It may be much less than what the rubber industry after a period of unprecedented prosperity considers normal. As Keynes would put it, "the game can be played for lower stakes".

THE MARKETING OF TIN-ORE IN KAMPAR*

BY YIP YAT HOONG,

University of Malaya in Kuala Lumpur

INTRODUCTION

So much attention has been given to the other more important aspects of the Malayan tin-mining industry that the role of the Chinese tin-ore dealers has so far been overlooked. This paper proposes to examine this particular aspect of the industry in Malaya and its relation to the smelting agencies, and to analyse some of its economic significance.

This study was carried out in one town, Kampar, in Perak. This town, with its long history of mining and tin-ore dealing, provides a wide scope for study. Moreover the nature of the Chinese tin-ore dealing business is the same all over Malaya.

Much of the material for this study was gathered through interviews with people connected with the business, particularly the tin-ore dealers themselves. The chief source of statistical information is the Perak Mines Department.

This study is concerned with the situation prior to the present tin-restriction scheme which came into force towards the end of 1957. For the purpose of statistical analysis, therefore, the data used are mainly those relating to 1956.

HISTORICAL BACKGROUND

The business of dealing in tin-ore was carried out by the Chinese in Kampar even before the establishment of the local smelting agencies. Licensed ore-buying however was established only with the introduction of the Mineral Ores Enactment of 1897, which controlled the buying, selling and transport of mineral ores. Earlier records are not available, but in 1907, according to the *Annual Report* of the Perak Mines Department, there were 30 tin-ore buying licences and 71 sub-licences in Kampar. The sub-licencees were at first travelling buyers but they later established themselves in shops in nearby villages where they bought ore from the outlying areas of Kampar.

At that time Chinese tin-ore dealing also included the smelting of tin concentrates. In 1909 three smelting licences were issued to Chinese ore-buyers in Kampar. This number grew until the depression in the twenties. The inefficient, wasteful and costly smelting method practised by the Chinese was responsible for the closing down of many local Chinese smelters in 1927. From then on, the smelting of the local tin concentrates has been the monopoly of two smelting agencies in Kampar.

Competition from the smelting agencies first came with the establishment of the Straits Trading Company branch in Kampar in 1890. The other agency, a branch of the Eastern Smelting Company, was established in 1907. The establishment of the smelting agencies had been of great value to the local miners in

* This paper is an abridgement of a thesis, "The Economics of Chinese Tin-Ore Dealing in Kampar," presented to the University of Malaya, Singapore, in December 1957 in part-fulfilment of the Degree of Bachelor of Arts with Honours in Economics.

those early days. It meant that they could now sell their ore for cash without having to be involved with the cost of smelting or having to accept the low price paid by the Chinese tin-ore dealers.

Thus by the first decade of this century there were two established groups of buyers of tin ores in Kampar — the smelting agencies and Chinese ore buyers. This position has remained unchanged to this day.

PRODUCTION AND MARKETING OF TIN-ORE

PRODUCTION METHODS AND SOURCES OF SUPPLY

The mining of tin concentrates in the Kampar Inspectorate¹ takes many forms. Table 1 shows the relative importance of these various mining methods in 1956.

TABLE 1. PRODUCTION OF TIN-ORE IN THE KAMPAR INSPECTORATE, BY METHODS OF MINING DURING 1956

Method of Mining	No. of mines in operation	Production		
		Piculs	% of total	Output per mine
a) Dredging (European):	8	81,512	46.9	10,189
b) Gravel-Pumping:				
i) Asian	100	73,846	42.5	738
ii) European	5	14,255	8.2	2,851
c) Others:				
i) Underground	1	10	—	10
ii) Magnetic separation of <i>amang</i>	(4)*	685	0.4	171
iii) <i>Dulang</i> Washing	—	3,435	2.0	—
Total	114	173,743	100.0	1,472

Source: Monthly production returns, Mines Department, Perak.

Note:* This figure is excluded from the total number of operating mines, as this method is one of recovery rather than of mining.

Dredging has the highest average output per mine and constitutes the largest single source of tin-ore in the Kampar Inspectorate. Because of its very high initial capital outlay, this technique of mining is confined to large-scale, heavily-capitalised mines which are chiefly European-owned. Ownership of gravel-pump mines is mixed — both Chinese and European, although the former is more common. Chinese gravel-pump mines are usually small units, with low average output compared with European gravel-pump mines which usually operate on a larger scale, and produce on the average four times the output of the Chinese-owned mines.

Of the other types of mining in the Kampar Inspectorate, underground mining is a new method of mining which has only recently been introduced into

1. For purposes of administration, the State of Perak is divided into six units, called inspectorates. The Kampar Inspectorate includes Kuala Dipang, Malim Nawar, Sungai Siput (South), Membang di-Awan and Kampar. Hence there is a clear distinction between the terms, 'Kampar' and the 'Kampar Inspectorate', as used in this paper.

this inspectorate. So far, output by this method has not been substantial. The remaining types are more methods of recovery rather than of mining. Tin-ore can be recovered by treatment of *amang*² with the use of a magnetic separator. Output by this method is very unstable compared with other methods of mining as much depends upon the availability of *amang* from the mines.

The other method of recovery is *dulang* washing³ which accounted for only 2% of the total production in the inspectorate in 1956. Throughout the mining areas in Malaya, the recovery of tin concentrates by the *dulang* washing method requires a licence or *dulang* pass. All *dulang* pass-holders are women. In Perak, in 1956, before the present tin-restriction came into operation, each pass was permitted to sell to a maximum of 25 katis of ore per month, while the stock held by each pass-holder at any time was not to exceed the permitted monthly sale. A *dulang* washer seldom requires more than a fortnight to fill up her monthly quota of 25 katis; the rest of the time is engaged in vegetable gardening, poultry farming or rubber tapping.

MARKETING OF TIN CONCENTRATES

The sale of tin-ore produced by the various methods of mining in the Kampar Inspectorate goes through the following usual channels:

- (i) To the smelting-works direct. This is done by all the dredges and most of the large European gravel-pump mines. Nearly half of the 1956 total production passed through this channel.
- (ii) To the agencies of the smelting companies. This is practised by all the local Chinese ore-buyers, by most European mines in the inspectorate and by some Chinese mines.
- (iii) To the Chinese ore-buyers. This is the practice of all *dulang* washers and marginal Chinese mines in the inspectorate.

THE SMELTING AGENCIES

The two smelting agencies in Kampar are branches of the Straits Trading Company and the Eastern Smelting Company.

TABLES 2: PURCHASE OF TIN-ORE BY THE SMELTING AGENCIES IN KAMPAR DURING 1956

Source of tin-ore	Purchase (Piculs)	Per cent of total
(a) Mineral Ore Licences:	39,253	27.9
(b) Mining Leases:		
(i) European	10,835	7.7
(ii) Asian	90,499	64.4
Total	140,587	100.0

Source: Mines Department, Perak.

Table 2 shows that the smelting agencies secure their concentrates from two sources — mineral ore licences and mining leases. The first source comes mainly

2. Tin-ore with a high percentage of black metallic impurities, produced by the dredges and gravel-pump mines during mining operations.

3. A *dulang* is a circular dish-like wooden pan, about two and a half feet in diameter. By a rotating movement of the *dulang* in which is placed tin-bearing earth and water, the tin ore is separated from the rest. This type of recovery is known as *dulang* washing in Malaya.

from the Chinese ore-dealers who act as agents of the smelters by collecting small deliveries of ore from dulang washers, among factories and marginal Chinese mines. Most of the ore comes from the marginal Chinese miners who are compelled to sell to the dealers in settlement of outstanding debts. The second source includes both European and Chinese mines. The bulk comes from the Chinese mines, usually those not tied down by loans from Chinese ore-dealers.

The price of the concentrates delivered to the smelting agencies is calculated from the price of metallic tin on the Singapore market, varying with the grade of the ore. A gross assay (i.e. the tin-metal percentage) is obtained by taking a representative sample of each parcel of concentrates delivered and assaying it by a cyanide method. To obtain the net price, the following deductions are made:—

(i) Treatment charges, which include assay deduction (mainly for impurities), geographical charges (such as transport, handling charges, insurance, storage, etc.; these are being fixed at \$2.50 cents per picul of ore), and smelting charges. A schedule of these charges is shown in Table 3.

(ii) Government duty of 12% of the tin price, regardless of the grade of the ore. On the other hand, a 60 cent cess is being paid towards each picul of ore.

(iii) Buffer stock levy of \$24 per picul of ore (except dulang-ore). This came into effect in October 1956.

The net price is the actual price paid to the miner or dealer who delivers the ore. For example, if the market price is \$379 per picul and the ore has a gross assay of 75%, then the actual price paid to the tin-miner for each picul of his ore, after all the necessary deductions, will be only about \$204 or about 54% of the tin price.⁴

TABLE 3. SCHEDULE OF TREATMENT CHARGES

Gross Assay (percentage)	Assay Deduction (percentage)	Geographical charges (\$)	Smelting charges (\$)
64.0	2.00	2.50	5.70
65.0	1.90	2.50	5.65
66.0	1.80	2.50	5.60
67.0	1.70	2.50	5.55
68.0	1.60	2.50	5.50
69.0	1.50	2.50	5.45
70.0	1.40	2.50	5.40
71.0	1.30	2.50	5.35
72.0	1.20	2.50	5.30
73.0	1.10	2.50	5.25
74.0	1.00	2.50	5.20
75.0	.90	2.50	5.15
76.0	.80	2.50	5.10
77.0	.70	2.50	5.05
78.0	.60	2.50	5.00

4. This figure is calculated with the help of Table 3. The gross assay value, at 75% is \$284.25. From this is deducted: (i) treatment charges of \$11.06, made up of assay deduction (0.9%), \$3.41, geographical charges, \$2.50, and smelting charges, \$5.15; (ii) Government duty of \$45.48 less \$0.60 for cess; and (iii) buffer stock levy of \$24.00. The total deduction is thus \$79.94, and the gross assay value less this amount yields the net price of \$204.31.

As it takes some time for a sample to be assayed, the tin-miner or ore-dealer cannot get the full sum for his ore on the spot. If he decides to sell immediately he can get an advance of 90% of the approximate value of the ore immediately, the balance to be paid to him only after the gross assay is known and the necessary deductions made. Sometimes a miner or dealer merely delivers his ore with no intention of immediate sale because he intends to speculate on its price. In this case he can get only an 80% advance. There is therefore, a clear distinction between selling the concentrates and merely delivering them to the smelting agencies. The smelting agencies, however, permit only a maximum of 28 days for parcels of ore to be left with them before selling. Since the International Tin Agreement came into operation, the relatively stable tin price has discouraged speculation to the extent that most tin-miners and ore-dealers today seldom just deliver their ore.

THE CHINESE ORE-DEALERS

Under various Enactments, tin-ore buying is forbidden unless by licensed ore-dealers. At the end of 1956, there were seven such licences in Kampar.

In 1956, the ore-dealers in Kampar purchased 16,552 piculs of tin concentrates. Table 4 shows the various sources of their supply.

TABLE 4. PURCHASE OF TIN-ORE BY THE 7 CHINESE TIN-ORE DEALERS IN KAMPAR, DURING 1956

Sources of tin-concentrates	Purchase (piculs)	Per cent of total
Concentrates from Mining Titles (i.e. Mines):	12,908	78.0
Concentrates from Mineral Ore Licences (i.e. Chinese Tin-ore Buyers):	209	1.3
Concentrates from Dulang Washers:	3,435	20.7
Total Purchased	16,552	100.0

Source: Tin-ore dealers' "Record of Purchase" book, Mines Department, Perak.

Most of the mines-ore purchased by the ore-dealers comes from the marginal Chinese miners who have secured loans from these ore-dealers to finance their mining operation. In return for these loans which are often given without any security backing, the miners have to sell their concentrates to their financiers. In this way, they are at their mercy as regards price. Unless tied down by a loan, most miners prefer to deal direct with the smelting agencies, as they can be assured of a fair price for their concentrates.

Ore may also be purchased from other tin-ore dealers. But inter-dealer transaction of this nature has dwindled in importance during the post-War years solely because of the present policy of the smelting agencies to accept deliveries of ore even below 15 piculs in weight on payment of a 'small parcel fee' of \$4 for each of such deliveries. Before the War, they refused to accept any delivery of ore of less than 15 piculs so that small dealers who had less than that minimum amount and who required cash urgently had had to sell to larger dealers.

The third source of ore for the Chinese dealers comes from dulang washing. The Chinese ore-dealers have a monopoly of dulang-ore because of the smelting

agencies' refusal to accept very small deliveries of ore at a time. But even if they do, the dulang washers cannot afford to pay the 'small parcel fee' of \$4 charged by the smelters for each delivery of ore of less than 15 piculs.

In the pricing of mines-ore, the Chinese tin-ore dealer usually sends a sample of the ore to one of the smelting agencies for a proper assay. The smelting agencies are supposed to charge \$5 for each assay, but usually no charges are made as they compete with each other for the dealer's ore. Since most of this ore comes from those marginal mines which have borrowed from the dealers, the price for this ore depends on the agreements drawn between the miners and the dealers at the time of the loan. The deduction for each picul of ore delivered to the ore-dealer varies between \$2 and \$12, depending on the amount and terms of the loan; generally, the more risky the loan, the higher the deduction.

In the case of dulang ore, since this is usually delivered in small quantities, never exceeding 25 katies per pass at a time, the smelters' method of assaying the ore becomes both uneconomical and impracticable. As a substitute, Chinese ore-dealers in general determine the grade of the ore by washing a sample. The price paid depends on the tin price for the day as well as on the grade of the ore.

A dealer usually divides dulang-ore into three grades:

(a) Ore with over 75% of tin-metal fetches between 60% and 61% of the tin price. This high-grade ore, however, is rare among dulang-ore.

(b) Ore containing between 74% and 75% of tin-metal is more common among dulang-ore, and this type fetches about 59% of the tin price in the market.

(c) Low-grade ore having a percentage of tin-metal of between 50 and 70 may fetch a price as low as between 30% and 50% of the tin price. Very low prices are usually offered for lower-grade ore as the treatment charges at the smelters vary inversely with the grade of the ore.

A dealer usually mixes up all the three different types of ore when selling to the smelting agencies because the latter refuse to accept ore of very low quality. In this way, the dealer finds a way of disposing of very low grade dulang-ore at profitable prices.

DEGREE OF COMPETITION IN THE PURCHASE OF TIN-ORE

With two smelting agencies and seven Chinese ore-buying licences in the Kampar Inspectorate all concentrated in one town, Kampar, the purchase of tin-ore must necessarily be very competitive, not only between the smelting agencies and among the Chinese ore-buyers themselves, but also between the smelting agencies and the Chinese ore-dealers. Any imperfection of market is limited to those ore-dealers who have advanced loans to marginal miners, and as a result, are keeping a monopsonistic hold of their ore.

COMPETITION BETWEEN THE TWO SMELTING AGENCIES

Since the establishment of the two smelting agencies in Kampar, competition between them for the purchase of tin-ore has been extremely keen. Table 4 shows the annual purchase of the two smelting branches over a period of 10 years, from 1947 to 1956. The 1924 and the 1930 purchase figures have been included for purposes of comparison.

Although the Straits Trading Company branch was the earlier established, its yearly purchase has been below that of the Eastern Smelting Company as early as 1930, and the situation has remained largely the same after the War. The 1924 data show that at that earlier date the Straits Trading branch was the bigger purchaser but that the situation was probably reversed some time between 1924 and 1930.

TABLE 5. ANNUAL PURCHASE OF TIN-ORE BY THE STRAITS TRADING COMPANY AND THE EASTERN SMELTING COMPANY BRANCHES IN KAMPAR DURING 1947-1956

Year	Straits Trading Company Agency		Eastern Smelting Company Agency		Total Purchase
	Piculs	% of total	Piculs	% of total	
1924	84,691	58.5	60,176	41.5	144,867
1930	108,499	44.1	137,109	55.9	245,608
1947	25,851	44.3	32,489	55.7	58,340
1948	46,946	41.6	65,752	58.4	112,698
1949	51,170	40.8	74,306	59.2	125,476
1950	59,984	46.5	69,401	53.5	129,385
1951	55,639	46.9	63,600	53.1	119,239
1952	48,184	39.0	75,290	61.0	123,474
1953	47,408	37.7	81,185	62.3	128,593
1954	53,318	39.6	81,282	60.4	134,600
1955	58,612	42.1	75,882	57.9	134,494
1956	60,449	42.9	80,138	57.1	140,587

Source: Mines Department, Perak.

TABLE 6. PURCHASES OF TIN-ORE BY THE SMELTING AGENCIES IN KAMPAR FROM VARIOUS SOURCES, 1956 (IN PICULS)

Source	Straits Trading	Eastern Smelting
Mineral ore licences	19,980	19,273
Mineral Leases: European	4,116	6,719
Chinese	36,353	54,146
	60,449	80,138

Source: Mines Department, Perak.

Table 5 shows that while the purchases from the Chinese ore-dealers were about the same, the nature of the purchases from mines differed, the Eastern Smelting agency obtaining more from both the European and the Chinese mines than the Straits Trading agency.

The keenness of the competition between the two agencies is indicated by the fact that in several cases the sale of ore is bound by some form of agreement between the miners and one of the agencies. Thus the Straits Trading agency in Kampar rents out two shophouses owned by the company to two Chinese dealers for an extremely low rent in return for exclusive deliveries of ore to that agency. On the other hand the larger purchases by the Eastern Smelting agency from the mines is the result of the fact that this agency is the sole buyer of the ore produced by the Anglo-Oriental Company. This company's mining method is chiefly dredging, and the land owned by the company which cannot be mined by this method is leased out to Chinese miners using the gravel pump method. These latter also sell their ore to the Eastern Smelting agency.

COMPETITION AMONG THE CHINESE TIN-ORE BUYERS

The purchase of tin-ore from the various sources is also keenly competitive among Chinese ore-dealers in Kampar. In Table 6, the two largest ore-dealers in Kampar are Dealers A and G. Both concentrate on the purchase of mines-ore, and buy very little dulang-ore. Like the smelting agencies, the larger ore-dealers usually find enough business dealing with mines-ore and do not compete for dulang-ore, the supply of which is limited by the number of dulang passes issued. Dealer A also receives small amounts of ore from the small dealer in Chenderiang in the Tapah Inspectorate. This shop is also the only one buying ore from the aborigines.

TABLE 7. PURCHASE OF TIN-CONCENTRATES BY THE 7 CHINESE ORE-DEALERS IN KAMPAR DURING 1956, FROM VARIOUS SOURCES

Kampar Tin-ore Dealers*	Concentrates from Mining Titles	Concentrates from Mineral Ore Licences	Concentrates from Dulang Washing	Concentrates from Aborigine Passes	Total Purchase
A	3,103	120	9	46	3,278
B	386	—	448	—	834
C	1,077	—	765	—	1,842
D	99	—	1,071	—	1,170
E	1,938	89	838	—	2,865
F	1,980	—	—	—	1,980
G	4,271	—	304	—	4,575
Total	12,854	209	3,435	46	16,544

Source: Kampar Ore-dealers' "Record of Purchase" books.

*The letters, A to G, have been used to represent the 7 ore-dealers to protect their identity.

The keenest competition for the limited supply of dulang-ore is among the smaller dealers. Since the Chinese ore-dealers form the only channel through which dulang-ore can be sold, several attempts have been made in the past to form an ore-dealers' association in Kampar whereby definite profit margins could be fixed for the purchase of such ore. These all failed because the dealers could not come to any workable agreements, and even when they did, they could not keep up with them. They failed to give accurate reports of their purchases and by some means or other they continued to undercut one another, and up to now the buying of dulang-ore remains as keenly competitive as ever before.

COMPETITION BETWEEN THE SMELTING AGENCIES AND THE CHINESE DEALERS

While there is little competition between the smelting agencies and the Chinese dealers in Kampar in the purchase of dulang-ore and ore from the European mines, as each goes through a definite channel, strong competition exists between these two groups of buyers for the purchase of the Chinese mines-ore. The dealers' practice of advancing loans to marginal miners to secure for themselves a monopsonistic market for their ore will be discussed in detail in a later section. It is significant to note that the dealers have lost the battle. Thus while in 1930 the smelting agencies bought 104,513 piculs of Chinese mines-ore against 118,130 piculs bought by the dealers, thereafter the purchases of the dealers steadily declined, and by 1956 the Chinese dealers brought only 12,908 piculs from the same source as compared to the smelting agencies' purchase of 90,499 piculs.

This decline in the purchase of the Chinese ore-dealers of Chinese mines-ore can be explained by the fact that ore-dealers today are advancing less loans to miners than they used to do before the War. In addition, the smelting agencies have after the War abandoned their policy of refusing to accept any delivery of ore of less than 15 piculs at a time. This has the effect of absorbing much of the small miners' ore which otherwise would have to be delivered to the Chinese ore-dealers.

THE SIGNIFICANCE OF LOANS IN THE CHINESE TIN-ORE DEALING BUSINESS

The ore-dealers' practice of giving loans as a means of competing for the ore from Chinese mines is the most unique (because of the unusual terms under which these loans are usually given), yet the most important feature of their ore-dealing business, as most of the marginal Chinese mines could not be brought into operation without this source of finance. An average Chinese gravel-pump miner is a small miner, working on marginal land that might have been leased and subleased several times. His mining land therefore, is usually poor while the tribute he has to pay is high so that there is always a tendency for him to aim at making an immediate profit by working out the richest ground first. Because of this practice, prevalent among the Chinese gravel-pump miners, an average Chinese gravel-pump mine has a lower expectation of life than one European-owned and operated.

Most of these Chinese miners have insufficient capital of their own so that they usually have to go the Chinese ore-dealers for the remainder of the required capital. The latter are always willing to advance a loan if the prospects of a profit from the mine are bright and if the miner is one whom they could trust. Almost all of these loans, however, are not backed by any form of security at all. The only condition is that the debtor-miner must deliver his ore to the creditor-dealer, and the latter will deduct whatever amount that has been agreed upon verbally as an 'interest' for the loan. The whole transaction is therefore merely a matter of mutual trust between lender and borrower, and as such it is a very risky business for the dealer. But the deductions are usually very high so that there are always some enterprising dealers who are prepared to take such risks at the expectation of large profits. In this respect, the Chinese dealers differ from the smelting agencies who, as a rule, do not encourage loans to their clients. Only in very exceptional cases, such as when a large miner is an old and regular customer, will the smelting agencies advance a loan. They charge the existing commercial bank rate for their loans and require them to be sufficiently backed by sound securities. The Chinese marginal miners, not being able to produce the necessary securities, are forced to borrow from the dealers on their terms.

The dealers' loans to miners may take many forms. The commonest, of course, is cash since all the mine-labourers are paid in cash. A loan may also take the form of fuel, mainly diesel oil, or mining machinery which might have been left over from the ore-dealer's last mining operation and now left idle. It may also be in the form of provisions, mainly foodstuffs required by mine-workers. This form, however, was more common in pre-War days when the ore-dealers were themselves provisions store-keepers. Today, this is no longer a part of the ore-dealing business as more and more other provisions stores are being set up to attend to the needs of the mining population.

A loan might begin initially with a certain sum of money but high operational costs might force a miner to ask for a further advance to continue operation. At this stage the ore-dealer will often have no alternative but to continue lending, for without such further advance, the mine might have to cease production altogether and the dealer would lose the whole of his initial loan.

The amount of a loan varies from a few hundred dollars to as much as a hundred thousand dollars. At any one time therefore, a dealer may be tied down by several hundred thousands of dollars of loan to miners.

As this unique feature of loans in ore-dealing depends solely on the fulfilment of a promise on the part of the debtor-miner, an ore-dealer must be satisfied that the miner is honest and trustworthy and that his investment is sound before he gives a loan, for if the miner fails to make good, the dealer loses too.

There has been a marked change in the significance of loans in tin-ore dealing in the post-War period, and considerably less loans are being given by the dealers in Kampar. Several factors have been held responsible for this change:

(1) Defaults are more common nowadays, and it is the general opinion of ore-dealers that the present-day miners lack the honesty of their pioneering ancestors. Hence loans are more risky.

(2) With most of the rich supra-marginal lands within the Kampar Inspectorate largely exhausted over the past decades, many Chinese mines today are marginal mines. In addition, most of these mining lands have been leased and subleased from the original owner so that they are usually insecure. The absence of attractive returns in terms of interest for their loans has discouraged most ore-dealers from investing in most of these marginal mines.

(3) Financial assistance in the form of loans for the rehabilitation of European and Chinese mines was introduced in 1946. Rehabilitation of Chinese mines was assisted by the Chinese Tin Mines (Rehabilitation) Loans Scheme, under which about half of the Chinese mines in Perak received loans.

(4) The mass cancellation of dulang passes and ore-buyers' licences in Perak during December 1951; in Kampar alone 10 out of the 13 existing licences were refused renewal for the following year, resulting in those 10 ore-dealers losing nearly all of their loans. As the only way of getting back those loans was to make the miners deliver their ore to them, the ore-dealers, now that they were no longer permitted to accept ore, lost all means of recovering their loans from the miners.

(5) Finally, prior to the introduction of the present Tin Restriction Scheme, contributions towards the International Tin Buffer Stock was started in October of 1956, under which \$24 was deducted for every picul of ore sold. This had the greatest effects on marginal mines, for in the succeeding months several mines in Perak closed chiefly because of this levy. This, of course, meant losses to the Chinese ore-dealers who had financed these mines in their operation.

In spite of their declining importance in recent years, loans in the Chinese ore-dealing business have played an important role in the tin-mining industry for over half a century, by bringing into operation marginal mines which would otherwise be left without a source of finance. Until some financial institution is set up to replace it, the Chinese ore-dealer will continue to be the chief financier to these marginal miners for many more years to come.

CONCLUSION

The Chinese tin-ore dealing business, like the Malayan tin-mining industry itself, depends on world demand conditions for tin, its profitability fluctuating with the changing economic and political situations in the world. Hence the outbreak of the Korean War and the subsequent United States stock-piling was a profitable period for the local ore-dealers, many of whom made enormous profits through speculation.

The present trend of tin-ore dealing by the Chinese is one of declining profitability, especially as the result of the operation of the present Tin Restriction Scheme. Its post-War business, especially after the Korean War boom, has never

attained to the level it experienced during the pre-War years. Several factors are responsible for this change:

(a) Exhaustion of rich mining lands in the Kampar Inspectorate, a problem which becomes more critical each year.

(b) Keener competition from the smelting agencies who after the War, have begun to purchase ore from the smaller mines, thus taking away a large proportion of the Chinese dealers' business.

(c) Reduction in the amount of loans given to marginal miners during the post-War years means that the Chinese ore-dealers can now secure less of the mines-ore from the local Chinese mines.

(d) The relatively stable tin-metal price in the Singapore market since the International Tin Agreement came into being has removed any opportunity for speculation.

(e) But the greatest blow to Chinese ore-dealing was the mass cancellation of ore-buying licences and dulang-passes during December 1951, on account of "irregularities in the entries on dulang passes, which it was considered were being used for the disposal of stolen ore for the benefit of the Communist organisation."⁵ In Kampar alone, 10 out of the 13 ore-buying licences and 1,645 out of the 2,357 dulang passes were cancelled. Although by 1956 the number of ore-buying licences and dulang passes has increased to 7 and 1,015 respectively, the business of ore-dealing in Kampar never recovered fully from the effects of the cancellation, as huge sums of money were lost through loans they failed to recover and through a general decline in the total purchase of tin concentrates in the subsequent years.

If the present trend continues, the role of the Chinese tin-ore dealers which in the past has formed such an important part of the tin-mining industry in Malaya would gradually be absorbed by the smelting agencies.

This role however has been important, and will form an interesting chapter in the history of tin-mining in Malaya.

THE POPULATION GROWTH OF SINGAPORE

BY YOU POH SENG,

University of Malaya

INTRODUCTION

The 1957 Population Censuses of Singapore and the Federation of Malaya are by now almost two-and-a-half years old. The statistical information obtained from these censuses have been published with increasing rapidity over the course of this year; in Singapore the publications take the form of Preliminary Releases,¹ and in the Federation of Malaya they take the form of Reports.² In all these releases and reports the statistical data are presented in great detail but with no comments of an analytical nature. Nor is any analytical study likely to be incorporated in future publications, preliminary, state or final.

This paper is presented to serve as the first of a series of analyses on the basis of the statistical data available to fill the gaps thus left open. It is expected that future analyses will be concerned with the economic and social characteristics of the population, the study of the movement of the population, the geographical distribution of the population, and so on. And of course the series will be extended to cover the Federation of Malaya when the report for the country as a whole is finally issued.

SINGAPORE — POPULATION AND POPULATION GROWTH³

The population of Singapore enumerated at the 1957 Census is 1,445,929, compared with the 1947 Census population of 938,144. This represents an average annual rate of increase over this period of 4.3%. Two points are to be mentioned with regard to this rate: first, that this rate is among the highest, if not the highest, in the world; and second, that this rate represents in fact an acceleration in the growth of the population of the island over the recent past.

The first point is illustrated in Table I which shows, for some selected areas of rapid population growth:- (1) The annual per cent growth rate based on the comparison of the two latest censuses, where available; (2) The annual per cent

1. These Preliminary Releases are published as Command Papers to be presented to the Legislative Assembly. They are printed by the Government Printing Office, Singapore, and are available from the Government Publications Bureau, Singapore. So far twelve releases have been issued; the total number will probably be sixteen. It is expected that in course of time all these releases will be incorporated in a bound Report together with an account of the administration of the Singapore Census.

2. These Reports are: *The 1957 Census — A Preliminary Report Based on "First Count Total" Returns*; *1957 Population Census of the Federation of Malaya — Report No. 1, Distribution of Population by Race and Sex States, Districts, etc.* The Reports from No. 2 onwards are State Reports. So far six of these have been issued.

3. Throughout this paper the population of Singapore is defined to exclude the non-locally domiciled service personnel, the transients afloat, and the small number of persons on far-off Christmas Island which until 1958 was part of the Colony of Singapore, but since then transferred to Australia.

growth rate based on the comparison of the latest midyear population estimate (mostly 1958, but in some cases 1957) against the latest census population; (3) The rate of natural increase (i.e., the excess of the birth rate over the death rate expressed as per cent of population) for 1957, in some cases for 1956; and (4) The density of the population for 1957.

TABLE I. POPULATION GROWTH AND DENSITY FOR
SELECTED AREAS OF RAPID GROWTH

Country	Average annual % growth rate		Crude rate of natural increase 1956/57	Density of population (persons per sq. ml.)
	Comparison of two latest censuses	Comparing latest midyear estimate with latest census		
Costa Rica	(1927-50) 2.30	3.60	3.08	53.7
Dominican Republic	(1935-50) 2.41	3.38	3.15	141.0
El Salvador	(1930-50) 1.29	3.35	3.42	178.4
Venezuela	(1941-50) 2.98	3.00	2.70	16.9
Mexico	(1940-50) 2.65	2.80	3.45	41.3
Iraq	(1947-57) 3.01	n.a.	n.a.	38.9
Ceylon	(1946-53) 3.01	2.75	2.66	361.8
Hong Kong	n.a.	4.32	3.04	6,606.1
Federation of Malaya	(1947-57) 2.52	3.16	3.42	123.8
Singapore	(1947-57) 4.33	4.61	3.52	6,455.0
Mauritius & dep.	(1944-52) 2.22	3.10	3.20	745.3

The main source for this column is *Population Index*, published by the Office of Population Research, Princeton University, and the Population Association of America, Inc., Vol. 25, No. 1, January 1959. The latest midyear estimates are mostly those for 1958; in some cases they are for 1957. All the annual growth rates, including those of the previous column, are calculated on the basis of exponential growth.

n.a. denotes not available.

The intercensal growth rate is probably the best indication of population increase in the recent past, provided the censuses have been carried out reliably and uniformly, for it involves a comparison of populations resulting from natural increase and from migrational movement. The comparison of the latest midyear estimate with the latest census is of course more up-to-date; on the other hand the midyear estimate normally has to make use of very inadequate data on migration.

On any basis of comparison it is apparent that the population problem of Singapore is a serious one. It has an annual growth rate exceeding 4%, and is only matched by Hong Kong in that respect as well as in the matter of population density. However the natural rate of increase is higher in Singapore than in Hong Kong, the tremendous increase in the latter area being caused to a large extent by the influx of population from Mainland China. In the case of Singapore there has been since the War a strict control of immigration from Overseas, but movement between the Federation of Malaya and Singapore has been and is still free. This movement is estimated to amount to over 10,000 persons every year coming from the Federation to Singapore.

With regard to the second point, that there has been an acceleration in the growth of the population of Singapore, this is borne out by the fact that prior to 1947 the intercensal rate of increase was consistently of the order of 3% per annum, while the rate comparing the 1957 population with the 1947 population is over 4%.⁴ In fact the analysis of the latest estimate shows that there is no sign of a check in this growth rate.

Perhaps a very brief summary of the history of the population growth of Singapore would be useful as a background to the analysis of the population pattern and of the population trend of the island.⁵ The principal cause of population increase up to 1930 was immigration from China and the then India. This tide was halted and to some extent reversed with the economic depression of the early thirties. With the recovery of the general economic situation, however, prospective immigrants found entry into the island restricted as a result of the Singapore Government's introduction of a quota system for Chinese male immigrants and of the Government of India's ban on the emigration of unskilled Indian labour. These restrictions did not apply to women; Chinese female immigrants were not subject to the quota system, while the Indian Immigration Committee set up a programme of providing assistance for South Indian women immigrants. After the War up to the present, and indeed in the future, the policy with regard to immigration from overseas is one of strict control, and the number of immigrants coming into the island is now very small, most of the persons granted permits for residence being wives and children of persons locally resident.

The influence of immigration on the population structure and the population growth of the island was typical. Up to 1930 the sex ratio was very abnormal (406 females per 1,000 males in 1911, 489 in 1921 and 583 in 1931), and the age distribution showed a large proportion of young adults (in 1931 26.2% of the population were aged 0-14, 44.1% aged 15-34, and 29.7% aged 35 and over). From the mid-thirties onwards the sex ratio steadily improved, birth rate increased and at the same time death rate fell continuously. By the forties natural increase had almost completely taken over the place of immigration as the principal factor of population growth, and in 1947 the following statistics were recorded: sex ratio, 821; age distribution, 36.0%, 34.3% and 29.7% in the age-groups 0-14, 15-34 and 35 and over respectively; crude birth rate, 45.89 per 1,000 population; crude death rate, 13.34 per 1,000; and a resulting crude rate of natural increase of 32.55 per 1,000 or about 3.3%.

One more point requires to be mentioned in connection with the physical movement of the population. Although immigration from overseas is subject to very rigid control, the movement between the Federation and Singapore is virtually free. This intra-Malayan movement can affect the population growth of the two areas if it is large, and if it is persistently in one direction. As it happens, the general direction of this movement has been from the Federation into Singapore, resulting in an estimated annual net gain into the latter of the order

4. See also You Poh Seng, "Fertility and the Increase of Population in Singapore", *Proceedings of the World Population Conference, Rome, 1954*, United Nations Ref. E/Conf. 13/413, Vol. I.

5. For full details see T. F. Smith, *Population Growth in Malaya*, London and New York, Institute of International Affairs, 1952.

of over 10,000 persons.⁶ This is equivalent to an annual rate of increase of between 0.7 and 1%, and is thus the factor responsible for converting an average annual natural growth rate of around 3.5% into an average annual growth rate of over 4%.

What is of significance however is the fact that even without this physical inflow of persons from the Federation, the natural growth rate of Singapore is intolerably high, and can by itself bring about a doubling of the population in 20 years' time. And when we take into account the population density of the island, there can be little doubt as to the seriousness of the population problem from the physical angle alone. If we study the demographic and the economic characteristics of the population, the seriousness of the problem is at least just as obvious.

DEMOGRAPHIC STRUCTURE

The population of Singapore has been and is still predominantly Chinese as a result of the large number of Chinese immigrants and presently of the rapid growth by natural increase among the Chinese who are settled on the island. Table II shows the numerical importance of the Chinese as well as the position occupied by the other two main ethnic groups, the Malaysians and the Indians and Pakistanis.⁷ (A comparison is made with the 1947 distribution).

TABLE II. POPULATION OF SINGAPORE, 1947 AND 1957 — ETHNIC GROUP/SEX DISTRIBUTION

1957					
Ethnic group	Male	Female	Total	% Distribution	Sex ratio
Chinese	555,663	534,932	1,090,595	75.4	963
Malaysians	103,249	93,811	197,060	13.6	909
Indians & Pakistanis	85,988	38,096	124,084	8.6	443
Others	17,860	16,330	34,190	2.4	914
Total	762,760	683,169	1,445,929	100.0	896
1947					
Chinese	387,373	342,100	729,473	77.8	883
Malaysians	62,264	51,539	113,803	12.1	828
Indians & Pakistanis	51,715	17,252	68,967	7.4	334
Others	13,611	12,290	25,901	2.8	903
Total	514,963	423,181	938,144	100.0	822

Thus the Chinese form about three-quarters of the population of the island, and the Malaysians and the Indians and Pakistanis together make up practically the remainder. The others comprise Eurasians, Europeans, Ceylonese, Arabs, and a sprinkling of persons from the surrounding countries.

Proportionately there appears to be a decline in the Chinese in 1957 compared to 1947, an increase in the Malaysians and the Indians and Pakistanis, and a decline

6. See Colony of Singapore, *Master Plan, Reports of Study Groups and Working Parties* (The Report of the Population Study Group), Singapore, Government Printing Office, December 1955. See also the various *Annual Reports* of Singapore, especially those for 1955 to 1958, (Singapore, Government Printing Office).

7. The term 'Malaysian' is used to include the indigenous Malay and the immigrant Indonesian of similar stock. In the Federation it also covers the few thousand nomadic aborigines found there. The Indians and Pakistanis are included as one group for the simple reason of facilitating comparisons with past censuses.

in the others. These proportionate changes, however, are slight, and certainly do not signify any trend towards a change in the ethnic group composition of the population. The slight increase in the proportions of the Malaysians and the Indians and Pakistanis probably indicate a somewhat larger movement of persons of these two ethnic groups from the Federation of Malaya to the island.

In respect of sex ratios, for the population as a whole, although the improvement from 1947 is appreciable, the ratio is still somewhat abnormal. But the Chinese certainly are almost normal in their sex ratio, showing the settled character of the immigrants and their descendents. The rather low overall sex ratio is caused mainly by the other ethnic groups, particularly the Indians and Pakistanis. The somewhat low ratio of the Malaysians, comprising as they do mainly the indigenous Malays, is the result in the past, and probably still at present, of the movement of a number of Malay males from the Federation who have come, and are still coming, to seek employment opportunities in Singapore, leaving their families behind until such a time when they are settled down to an employment or when they decide to go back.⁸ The Indians and Pakistanis have the most abnormal sex ratio, and although there has been a slight improvement (from 334 in 1947 to 443 in 1957), it is still very low. This is indicative of the fact that the Indians and Pakistanis have in most cases not intended settling in Malaya. There is probably some tendency to settle, particularly among the higher social and economic groups in urban areas,⁹ and it is likely that in Singapore their sex ratio is kept low because of the rigid immigration control¹⁰ and because of the movement of rubber estate Indian labourers, mainly the single males, from the Federation.

TABLE III. POPULATION OF SINGAPORE, 1957 — PER CENT DISTRIBUTION, FOR AGE-GROUPS FOR THE WHOLE POPULATION AND FOR PRINCIPAL ETHNIC GROUPS*

Age-group	Whole population	Chinese	Malaysians	Indians and Pakistanis	Others
0-4	18.3	18.1	21.9	15.2	14.5
5-9	15.1	15.6	14.8	11.6	12.8
10-14	9.4	10.1	8.4	6.2	6.5
15-19	9.4	9.8	8.9	7.0	6.8
20-24	8.2	7.9	10.4	8.2	8.1
25-29	7.7	7.0	9.0	11.4	9.6
30-34	6.2	5.4	7.2	10.4	10.0
35-39	5.7	5.1	5.9	9.9	8.4
40-44	5.3	5.3	4.0	7.2	6.3
45-49	4.6	4.8	3.2	5.5	5.2
50-54	3.6	3.8	2.3	3.4	4.2
55-59	2.6	2.8	1.6	2.2	3.0
60-64	1.7	1.9	1.0	1.0	1.8
65-69	1.1	1.2	0.6	0.4	1.3
70-74	0.6	0.7	0.4	0.2	0.8
75-79	0.3	0.3	0.2	0.1	0.4
80-	0.2	0.2	0.3	0.1	0.3
	100.0	100.0	100.0	100.0	100.0

* Not all totals add up exactly to 100.0 owing to approximation.

8. *Vide infra* for some supporting evidence.

9. *Vide Smith, op. cit.*, pp. 84—85.

10. Although the control is not so rigid with regard to wives and children of local residents, the procedures involved in obtaining permits to come in and settle are sufficient deterrents to any large-scale movements.

Table III is presented to serve as the basis for discussion for the next aspect of the demographic pattern of the population. It shows for the population as a whole and for the principal ethnic groups the per cent distribution for five-year age-groups.'

This table gives supporting evidence to some of the points mentioned in connection with the physical movement of the population. Thus while for the Chinese the age distribution is fairly smooth and reflects largely the results of natural increase,¹¹ in the case of the Malaysians the irregularity in the age range 15 to 30 or thereabouts can only be due to the movement of Malays from the Federation. As a further argument we may mention that whereas the sex ratio of the Malaysians from birth to about 20 is normal, from age 20 onwards it drops considerably, showing more males than females.¹² The same picture holds in the case of the Indians and Pakistanis, but here the situation is aggravated by the past immigrants from their countries of origin not showing any strong tendency to settle. The sex ratio for the Malaysians from age 20 to about age 55 varies largely between 700 and 800, while that for the Indians and Pakistanis varies largely between 100 and 300 from age 25 right up to age 80. The group 'Others' is of course influenced to a very large extent by the considerable number of expatriates between the ages 20 and 45 or thereabouts.

What however is of great importance is the fact that for the population as a whole the proportion of young persons is so very large, and this is typical of a rapidly growing population. This is illustrated in Table IV which presents the proportionate distribution of the population by three broad age-groups for Singapore compared to that for some selected areas of similar rates of population growth on the one hand and some selected areas of lower rates of growth on the other.

Countries with rapid rates of population growth (not as a result of immigration) have a population characterised by a large proportion of children and a small proportion of old persons. It is not easy owing to different legislations pertaining to entry into the labour market in general to fix an age when childhood ends and another age when old age begins, and even if this can be done, census data are usually presented in such a way that it does not facilitate any reallocation of persons to the resulting categories. For these reasons it is usual, and it is also sufficient for broad indications, to regard the under 15 as the dependent children and the 60 and over as the dependent old persons, while persons aged 15 up to 60 are regarded as comprising largely the working population. On this basis, and in reference to Table IV, the rapidly growing populations have in general just over

11. Even so the abrupt drop in the group 10—14 requires some explanation, for which *vide infra*. The very slight irregularity in the 40—49 groups is of course the result of past immigration movement.

12. The drop in the Malaysian sex ratio in fact continues up to age 55 or thereabouts. This is probably due to the fact that the Malays who moved from the Federation over the course of years were unmarried males who had no wives to bring in when they decided to settle on the island, and some of whom probably found their wives in Singapore.

It is perhaps pertinent to point out that the relatively much more normal sex ratio among the Chinese throughout the whole age range does not rule out the possibility of shifts among the Chinese from the Federation; only the Chinese from the Federation move with their whole family if they move, for they usually have no other relatives with whom to leave their family while they themselves come ahead to explore employment opportunities, and it is uneconomical to maintain two establishments at the same time.

As a matter of fact a careful comparison of the detailed age distribution of the 1947 population with that of the 1957 distribution for the Chinese shows that there must have been (and probably still is) some movement even among the Chinese from the Federation.

TABLE IV. PER CENT DISTRIBUTION OF POPULATION BY THREE BROAD AGE-GROUPS FOR SINGAPORE AND (A) SOME SELECTED COUNTRIES OF SIMILAR RAPID POPULATION GROWTH, AND (B) SOME SELECTED COUNTRIES WITH LOW RATES OF GROWTH*

Country	Year	Age (Per Cent Distribution)			
		Under 15	15 up to 60	60 and over	Total
Singapore	1947	36.0	60.4	3.6	100.0
Singapore	1957	42.8	53.3	3.9	100.0
<i>Countries of Rapid Population Growth</i>					
Costa Rica	1950	42.8	52.3	4.7	100.0
Dominican Republic	1950	44.5	50.8	4.7	100.0
Venezuela	1950	41.9	53.4	4.5	100.0
Mexico	1950	41.7	52.7	5.6	100.0
Ceylon	1955	40.7	55.8	3.5	100.0
Federation of Malaya	1947	39.9	55.0	5.1	100.0
Philippines	1956	44.1	51.3	4.6	100.0
Mauritius & dep.	1952	40.1	54.1	5.6	100.0
<i>Countries with Lower Growth Rates</i>					
Australia	1956	29.3	58.3	12.4	100.0
Sweden	1955	23.8	60.4	15.8	100.0
United Kingdom	1956	23.1	60.5	16.3	100.0
United States	1956	30.0	57.3	12.6	100.0

* Where the totals do not add up exactly to 100.0, this is due to approximation and in some cases to the fact that there is a small proportion of persons of unknown age.

half the persons in the working age range and just under half in the dependent age ranges, while populations with lower rates of growth have about three-fifths of their people in the working age range and two-fifths in the dependent age ranges. The difference between the two types of population is however to be considered in conjunction with several other factors, namely, first, the differential rates at which females are economically active; second, where immigration has been an important past factor of growth, the abnormal sex ratio in the working age range; and thirdly, the differential productivities of the labour force arising from the heavy concentration in the young ages within the working age range in rapidly growing populations as compared to the concentration in the older ages in populations with lower growth rates.¹³ By and large, even taking these factors into consideration, it seems justifiable to conclude that the dependency burden in the former type of population is heavier than in the latter type.

But there is yet another aspect in Table IV which requires study, namely the nature of this dependency burden. In rapidly growing populations the child dependents are of overwhelming numerical importance compared to the old age dependents, while in populations with lower growth rates child dependency is relatively less important owing to the ageing of the population. It can thus be seen that in the rapidly growing populations there are approximately 5 persons in the dependent age groups to every 5 persons in the working age group, and that of the 5 persons in the dependent age groups, 4 are child dependents and 1 is an old age dependent. In the populations with lower growth rates there are just over 3

13. For the last factor see also United Nations, Secretariat of the Economic Commission for Asia and the Far East, *Economic Bulletin for Asia and the Far East*, Vol. X, No. 1, June 1959, p. 14.

persons in the dependent age groups to every 5 persons in the working age group, and of the 3 persons in the dependent age groups, 2 are child dependents and 1 is an old age dependent.

Coming back to the situation in Singapore, the comparison of the 1957 broad structure with that of 1947 shows that while the proportion of old persons has not changed much, the proportion of children under 15 has increased significantly at the expense of the working age-group, and this has brought about an increase in the dependency burden of the population. What however is hidden in this table and even in Table III is the relatively small number of persons aged 10-14. Most of the persons in this age-group in 1957 were born during the years 1942-45, the years of the Japanese occupation of the island. No vital records were kept in those years, but it is generally known that a combination of low birth rates and high infant mortality rates was responsible for the relatively small number of children born and survived from that period. Thus the number of children enumerated in 1957 aged 10 was about 40,000, those aged 11 numbered about 27,000, and those aged 12 to 15 numbered between 22,000 and 25,000 per year of age. At age 16 the number exceeded 27,000, and thereafter it gradually declined approximately in accordance with normal natural pattern, some irregularities observable in the middle and late middle ages being the leftovers from past immigration.

The implication of this is twofold. First, the youthfulness of the population in 1957 is to some extent affected by the relatively small number of these persons in their late childhood then; as they pass into the working age range in the course of these few years, the proportion of persons under 15 will rise as a result of this ageing process as well as from natural growth, and this proportion will stay at the very high level (of between 45 and 50% and perhaps later exceeding 50% on the basis of the fertility and mortality patterns of the recent past) for the next 45 or so years, after which the passage of these persons into old age will tend for a time to lower the proportion of old persons. What this amounts to is that for the next half a century or so the ratio of dependents to persons in the working age range is likely to exceed 1:1 unless there is a change in the fertility, or the mortality, or the direction and amount of population movement to and from the Federation.

The second implication is connected with the first and concerns the position at present and in the immediate future. The presence of the relatively small number of persons in the age span bridging the school-going age and entry into the labour force is likely to hide to some extent the full force of the effect on educational facilities, and in a few years on the labour market, of persons born after the War. Unless this fact is kept well in mind, the apparent relative lull at the moment can render the surge in the immediate future all the more unbearable. Of course this surge has already been, and is being, felt in the primary school stage, and is at the moment also being felt in the secondary school stage. But the rush into the labour market is yet to come.

REPRODUCTIVITY AND POPULATION GROWTH

The population of Singapore is now largely a settled one. The Chinese, almost the whole of the Malaysians, and probably a section of the Indians and Pakistanis, together with some of the minor ethnic groups such as the Eurasians have all settled on the island, and they comprise probably between 90 and 95% of the total population. External migration is under rigid control, while the movement from the Federation is more or less known and is in fact not very large and can indeed vary to a certain extent according to the relative political

and economic atmosphere of the two areas. The study of the natural increase of the population, together with the concomitant study of fertility, reproductivity, and related matters, is therefore an important aspect of the demographic analysis of the area.

Table V sets out the various crude rates for the population as a whole and for the principal ethnic groups¹⁴ for 1957 and compares these with rates for 1947.¹⁵

Crude birth rates have declined in 1957 compared to 1947, but the crude death rates have declined even more proportionately, so that the crude rates of natural increase are in fact higher in 1957 than in 1947.

DEATHS AND DEATH RATES

The death rates are among the lowest in the world, and this is the result of three factors, namely, the very small proportion of old persons, the high standard of public health and hygiene, and the lowering of the infant mortality rates. From 1947 to 1957 there has been a vast improvement in the general health of the population, the improvement being particularly noticeable in the infant mortality rates. The situation is shown in Table VI where the age-specific mortality rates (relating the number of deaths in specific age-groups to the number of persons in the corresponding groups, and expressed as per 1,000 persons) are given for broad age-groups.

TABLE V. SINGAPORE — SHOWING THE CRUDE BIRTH RATE, THE CRUDE DEATH RATE AND THE CRUDE RATE OF NATURAL INCREASE FOR 1947 AND 1957. (ALL RATES ARE EXPRESSED AS PER 1,000 POPULATION)

	1947			1957		
	Crude birth rate	Crude death rate	Crude rate of natural increase	Crude birth rate	Crude death rate	Crude rate of natural increase
Total population	45.9	13.3	32.6	42.5	7.3	35.2
Chinese	46.1	12.8	33.3	42.4	7.1	35.3
Malaysians	48.1	17.8	30.3	47.3	10.0	37.3
Indians & Pakistanis	44.8	12.7	32.1	40.4	6.4	34.0

14. The group 'Others' is too miscellaneous a group to yield any useful results in a comparable analysis. The numbers involved are too small in any case to justify detailed analysis.

15. It is interesting to note that on the basis of the 1957 Census results the intercensal estimates between 1947 and 1957 were all found to be in effect under-estimates, the reason being that in these estimates the intra-Malayan movement was not taken into account. The Singapore Statistics Department therefore revised all these estimates making use of the 1957 results and taking into account this movement, going back to 1950, and has undertaken to take into account this movement in all future population estimates. Because of the revised estimates all the vital rates published previously locally and in international publications are affected.

TABLE VI. AGE-SPECIFIC DEATH RATES, SINGAPORE, BY BROAD AGE-GROUPS, 1947 AND 1957

	Age-specific Death Rates						Standardised Death Rate on 1947 Standard
	Under 1	1-4	5-14	15-49	50 & over	All ages	
1947							
ethnic groups	138.1	15.5	2.4	8.0	30.0	13.3	
Males	148.6	15.0	2.5	9.1	35.4	14.4	
Females	127.1	16.1	2.3	6.4	24.2	12.0	
Chinese	138.1	15.5	2.1	7.6	30.2	12.8	
Males	146.9	15.2	2.3	9.2	37.3	14.4	
Females	128.8	15.9	1.9	5.7	23.2	11.1	
Malaysians	161.3	19.0	3.8	10.0	33.5	17.8	
Males	183.9	17.3	3.8	9.8	32.4	17.7	
Females	138.4	20.7	3.7	10.2	35.0	17.3	
Indians & Pakistanis	110.5	11.6	4.3	8.7	27.2	12.7	
Males	114.3	11.6	2.8	8.1	25.6	11.3	
Females	106.8	11.5	5.9	11.3	36.0	16.9	
1957							
ethnic groups	44.6	4.6	1.2	3.0	32.3	7.3	6.7
Males	48.8	4.6	1.3	3.4	38.0	8.2	7.3
Females	40.1	4.7	1.1	2.6	26.3	6.5	5.9
Chinese	35.7	4.1	1.1	2.9	32.0	7.1	6.3
Males	39.1	4.0	1.2	3.5	39.6	8.1	7.2
Females	32.1	4.3	1.1	2.2	24.9	6.0	5.3
Malaysians	81.6	7.2	1.9	3.5	40.3	10.0	9.4
Males	90.5	7.0	2.4	2.9	40.0	10.2	9.3
Females	72.6	7.3	1.4	4.2	40.7	9.8	9.3
Indians & Pakistanis	46.0	4.4	0.9	3.4	27.3	6.4	6.1
Males	50.1	5.5	0.9	3.3	26.8	6.5	6.0
Females	41.8	3.2	0.9	3.8	30.1	6.0	6.4

The rates have declined for nearly all age-groups; in many cases the 1957 rates are about half of the corresponding 1947 rates, and in some cases they are as low as one-third or even one-quarter. Thus the rates for children under 1 have declined to one-third of the 1947 rates for the Chinese and for the island as a whole, and to about half for the Malaysians and the Indians and Pakistanis.¹⁶ The rates for those aged 1-4 are mostly one-third to one quarter of the 1947 rates, while those for persons age 5-14 are mostly half, going down to one-fifth or one-sixth in the case of the Indians and Pakistanis. In the case of persons aged

16. These rates for the under 1 age are of course somewhat different from the usual infant mortality rates, which are rates obtained by relating the number of deaths of infants under 1 over the year to the number of live births during the same year. The number of infants enumerated at the Census refer to live births during the year prior to the Census *who have survived* to the time of the Census. The number of live births irrespective of survivals is naturally larger than the number of live births who have survived, and hence the usual infant mortality rates must be smaller than the rates for children enumerated at the Census as under 1. For example, for Singapore as a whole, the infant mortality rate for 1957 is 41.1 per 1,000 live births whereas the age-specific rate for infants under 1 for the same year is 44.6 per 1,000 such infants.

15-49 the 1957 rates are almost consistently one-third of the 1947 rates. Only in the 50 & over group do we notice a slight deterioration; the Indian and Pakistani rates are slightly lower in 1957, the Chinese rates are about the same, and the worsening is only noticeable in the case of the Malaysians.¹⁷

The 1957 rates over all ages are just about half the 1947 rates. The direct comparison of such crude overall rates over any period of time, however, is normally subject to the criticism that these rates actually compare not only the mortality experiences but also the age structures at the two points of time. Thus, the age range 5-49 includes persons who have survived the vulnerable stage of infancy and have not yet entered the equally or more vulnerable stage of old age; a population comprising a large proportion of such persons would have a much lower overall crude death rate than a population having a large proportion of infants and old persons, even though the age-by-age mortality experiences of the former population are not different or even worse than those of the latter population.

To affect direct comparability between the overall mortality experiences of 1957 with 1947, standardised death rates for 1957 have been calculated on the basis of the 1947 age structure as standards. By applying the detailed 1957 age-specific death rates to the 1947 age-distributions, the resulting standardised rates in effect express what the general mortality experiences in 1957 would have been if the population in that year has the same age structure as the 1947 population, and they are then immediately comparable to the 1947 crude death rates. The 1957 rates so standardised are shown in the last column of Table VI. Comparing them with the 1947 crude rates enables us to conclude that the general mortality experiences in 1957 are in fact somewhat better than are apparent in the first comparison of the two sets of crude rates. The standardised rates for 1957 are consistently lower than the crude rates for 1957; this is indicative of a larger proportion of persons in the vulnerable age groups in 1957 compared to 1947, and from the analysis of the demographic pattern we know that this proportion is in the infant category.

FERTILITY

Turning now to the study of fertility, the question that merits consideration is this, do the lower crude birth rates in 1957 compared to 1947 indicate that the fertility of the population has declined? Birth rates relate births to the total population, and are therefore not a true reflection of fertility. Table VII shows the age-specific birth rates which are rates relating the number of children born to women of specific age-groups to the number of women in the corresponding age-groups. The rates for 1947 are also shown for comparison.¹⁸

This table brings out some interesting changes in the pattern of births. For the population as a whole the age-specific birth rates for under 25 have declined, but those for the groups 25-34 have increased. The rates for women over 35 years of age have remained constant. The Chinese rates have also declined for women under 25, but have increased for women after that age right up to the end of the child-bearing age. The Malaysian rates have changed in a completely

17. The only probable explanation for the worsening of the old age mortality rate is that a number of old persons suffering from diseases come from the Federation to avail themselves of the medical facilities in Singapore. When they die in Singapore they are normally regarded as Singapore residents, and they thus tend to raise the death rates in their age-groups.

18. Many of the rates relating to fertility and reproductivity of 1947 have been previously presented in my paper to the Rome World Population Conference (*op. cit.*) dealing with the population growth in Singapore in 1947. These rates will be quoted without further note of reference.

TABLE VII. SINGAPORE — AGE-SPECIFIC BIRTH RATES (BIRTHS PER 1,000 WOMEN IN SPECIFIED AGE-GROUP) FOR THE TOTAL POPULATION AND FOR THE THREE MAJOR ETHNIC GROUPS, 1947 AND 1957

Age-Group	1947				1957			
	Singapore	Chinese	Malaysians	Indians & Pakistanis	Singapore	Chinese	Malaysians	Indians & Pakistanis
15-19	102	101	112	153	78	47	194	244
20-24	314	324	255	424	303	282	338	393
25-29	334	344	293	439	355	361	317	341
30-34	270	261	297	510	289	308	221	256
35-39	196	184	252	431	195	210	133	155
40-44	83	77	112	229	81	89	42	56
45-49	11	10	16	30	12	13	10	5

Note: A few births to mothers aged under 15 are for convenience sake included as births to mothers aged 15—19; similarly a few births to mothers aged 50 and over are included in the 45—49 group.

different direction to those of the Chinese; they have increased for women under 30 and have declined thereafter. Lastly the rates for the Indians and Pakistanis have declined for all age-groups except for the youngest group, 15-19.

There seems to be an indication that the Chinese tend to have children later than before, but that the rate at which they bear children from the later age is higher than before. The Malaysians on the other hand tend to have children earlier, but their birth rates tend to slow down after age 30. The Indians and Pakistanis appear generally to have lower rates at which they bear children.

The Census information provides data on the marital status of the population. Table VIII is an analysis of a part of these data for the purpose of studying in broad terms the marriage of the major ethnic groups. This table shows the number of married women per 1,000 women by age-groups in the range 15-49 comparing the situation in 1957 with that in 1947.

TABLE VIII. SINGAPORE — NUMBER OF MARRIED WOMEN PER 1,000 WOMEN BY AGE-GROUPS FOR THE THREE MAJOR ETHNIC GROUPS, 1947 AND 1957

Age-group	Married Women per 1,000 Women					
	1947			1957		
	Chinese	Malaysians	Indians & Pakistanis	Chinese	Malaysians	Indians & Pakistanis
15-19	194	630	624	126	532	486
20-24	345	891	898	597	875	851
25-29	859	917	937	876	933	939
30-34	844	888	931	912	934	954
35-39	788	856	849	878	903	907
40-44	704	738	729	797	811	832
45-49	600	672	624	684	700	705

Because of the differential mortality conditions in the two years, it is not easy to compare the rates for the older groups in too great details apart from stating that in 1957 proportionately more women are married than in 1947. The first two age-groups, however, can be considered in somewhat greater detail and

studied in conjunction with Table VII. Thus for all the three ethnic groups there are less married women per 1,000 women in the group 15-19, indicating that there are now a smaller number of teenage marriages of the women. In the next age-group, although the number for the Chinese in 1957 is lower than that of the two other ethnic groups, it nevertheless represents a significant increase compared to 1947, and for Chinese women under 25, about 720 women per 1,000 women are married in 1957 whereas in 1947 only 504 women per 1,000 women were married. Yet in spite of this the birth rates for Chinese women under 25 have declined, so that there is real evidence that the fertility of the younger Chinese women has decreased to a certain extent, although this should not be taken as indicating that fertility for Chinese women has generally decreased.

For the Malaysians and the Indians and Pakistanis, the number of married women per 1,000 women in the 15-19 group has declined, and that for the next age-group has also declined, though to a much smaller extent. This indicates that there is a certain tendency for women of these ethnic groups to marry somewhat later than before. Taken together with the relevant data of Table VII, there is evidence to suggest that the fertility of the young Malaysian women has not decreased but has in fact increased, but that this again should not be taken to show that the fertility for Malaysian women has generally increased, since the variation in the later age-groups shows some slight tendency in the other direction. In the case of the Indians and Pakistanis two clear tendencies are indicated, first, that fertility in the youngest age-group has increased, and second, that fertility thereafter has decreased very significantly.

REPRODUCTIVITY

The overall fertility picture is probably best measured by the gross reproduction rate, which is the rate at which women reproduce themselves. It indicates the number of females born to every female as the latter passes through the reproductive age range from 15 normally up to 50. Such rates can be compiled from Table VII or by directly relating the number of female births to women in the age range 15-50.

The gross reproduction rates for the whole of Singapore and for the three major ethnic groups for 1957 are as follows (the 1947 rates are given in brackets after the corresponding 1957 rates for direct comparison):- Singapore, 3.2 (3.2); Chinese, 3.2 (3.1); Malaysians, 3.1 (3.3); Indians and Pakistanis, 3.5 (5.5).¹⁹

The decrease in the overall fertility of the Indians and Pakistanis is clear, but that is really a decline from a very abnormal rate to a more normal one in line with the rates of the other two settled groups. It is not possible to conclude whether this rate will continue to decline, although there is no other evidence (demographic, social, economic or medical) to suggest that it should do so for long and to any large extent, or that it should go much below the rates of the other two ethnic groups. In any case the relatively small influence of the Indians and Pakistanis on the fertility of the island is to be seen from the fact that in spite of the very significant decrease in their gross reproduction rate, that for the whole of Singapore has not decreased at all.

19. The fact that the general fertility of the island has not declined is completely consistent with the lower crude birth rates for 1957 as compared with those for 1947. The crude birth rates relate births to the total population, and the lower rates for 1957 in effect reflect the larger proportion of young children in that year compared to 1947. These children are not themselves in the reproductive age range, and they serve merely to depress the crude birth rates without indicating the true picture of fertility.

In the case of the Chinese and the Malaysians, although there has been some slight changes in the age pattern of their respective fertilities, their overall fertilities have not changed, and it is evident that the numerical predominance especially of the Chinese is reflected by the fact that the rate for the whole island has remained the same in 1957 compared to 1947.

The gross reproduction rate however does not give a real picture of reproductivity, though it does provide a reliable measurement of pure fertility. For a clearer analysis of reproductivity it is necessary to take account of mortality, for this is the other major factor affecting reproductivity. The net reproduction rate is normally used to take account of mortality, and it represents the rate at which women reproduce themselves at the prevailing conditions of fertility and mortality.

The compilation of the net reproduction rate requires the prior compilation of the life tables of the population, and these tables for Singapore for 1957 have not yet been prepared since they necessitate detailed study of the census and the vital registration data, careful adjustment of these data and a good deal of preliminary calculations, all of which take time. It is unlikely that these tables will be prepared and made available in the near future, but in the mean time it is possible to draw some conclusions in respect of the reproductivity of the population of the island.

The discussion in the section on mortality has made clear the point that mortality for Singapore and for the major ethnic groups has declined, and that in all cases the decline is very significant. Now if the gross reproduction rate of the island has not in fact decreased in 1957 compared to 1947, and if on the other hand mortality has decreased, it is justifiable to conclude that the net reproduction rate in 1957 must be higher than that in 1947. It is also justifiable to conclude that the net reproduction rates for the Chinese and most probably for the Malaysians have increased, but that the rate for the Indians and Pakistanis has decreased somewhat. This means that the population increase on 1957 experiences is at least at the same rate as, and most probably at a higher rate than, that on 1947 experiences.

CONCLUSION

The 1957 Census of Singapore shows the population of the island to be of the order of around one-and-a-half million persons, with hardly any change in their ethnic group composition. By and large the population possesses most of the characteristics of a settled albeit somewhat mixed community, with a very negligible external migrational movement, while the internal movement has been mainly from the Federation of Malaya to the island. The natural increase has been of the order of 3.5 per cent per annum, and this rate, together with the internal movement, has given rise to the very high intercensal rate of increase from 1947 of over 4 per cent.

The sex ratio of the population is fast approaching normal, especially in the case of the Chinese. The age structure shows a very young population, the broad base of the structure comprising about 43% of persons under 15 years of age. This proportion is likely to increase in the course of these few years. The pressure on the educational facilities and very soon on the labour market are problems of immediate urgency, and are not likely to relax in the near future.

Despite some small changes in the fertility pattern of the population, the overall fertility has remained more or less the same compared with 1947. On the other hand, mortality has declined significantly, so that reproductivity has most probably increased, thus pointing to the conclusion that the population has been and perhaps is still increasing at an accelerating rate.

SOME ASPECTS OF INCOME TAXATION IN VIET-NAM

BY MILTON C. TAYLOR*

Introduction

As in other underdeveloped countries, the institutional circumstances in the Republic of Viet-Nam are not well adapted to the development of an income tax. The dominant agriculture base of the economy is a pervasive inhibition; accounting practices are not well developed in the business sector; and social responsibilities have not evolved to the point where there is a widespread willingness on the part of taxpayers to assess themselves voluntarily. As a result, compliance leaves much to be desired and enforcement is onerous. Nevertheless, despite the obstacles, there is a need for giving the income tax in Viet-Nam priority of treatment in the evolution of a more equitable and productive tax system which would, at the same time, be more conducive to economic development.

Emphasizing the income tax in any program of general tax reform is supported by considerations both of economic growth and of equity. Viet-Nam, again like most underdeveloped countries, is dependent on import duties for the overwhelming proportion of its revenues, supplemented by a group of miscellaneous taxes, fees, and licences on internal production and exchange. All of these sources of revenue stultify trade and production in varying degrees by restricting and distorting optimum patterns of consumption and factor allocation. The burden of these levies is shifted largely to low-income groups, with the end result that the distribution of income and wealth is made more unequal as a result of the tax system. On the other hand the income tax, more than any other tax, is identified with equity, or the distribution of the tax burden among income groups in such a way as to take into consideration individual ability to pay.

Tax progress in Viet-Nam, therefore, is to some considerable degree identified with the development of the income tax. That this is possible, despite the difficulties, is borne out by the fact that the country already obtains about 10 per cent of its central government revenues from income tax. That this percentage could be improved is supported by the experience of such countries as the Federation of Malaya and the Republic of the Philippines, where the income tax accounts for about 20 per cent of government revenues. A comparable strengthening of the income tax in Viet-Nam appears to be entirely feasible, because the institutional circumstances in these countries are not unlike those in Viet-Nam.

This article is expository and analytical rather than policy-oriented. It attempts to present by description and analysis the principal objective characteristics of the Vietnamese system of taxing income on the assumption that such information is an appropriate area of public inquiry. No policy recommendations are made on the grounds that this level of analysis is more identified with executive and legislative responsibility.

* Associate Professor of Economics, Michigan State University. The author is presently assigned to the Michigan State University Advisory Group in Viet-Nam. Despite this affiliation, however, the analyses in the article are meant to be entirely personal and to be dissociated from the writer's role as a technical advisor.

HISTORY OF INCOME TAXATION IN VIET-NAM

Historically, the income tax in Viet-Nam evolved as a result of the gradual addition of fragmented parts. The earliest tax which vaguely resembled an income levy was a capitation or poll tax levied only on upper income individuals who paid more than 500 piasters¹ in the form of either a land tax or *patente* (business licence tax). The first direct tax on income, dating back to 1908 and codified in 1929, was a gross tax on dividends and interest paid by corporations. This tax is still in effect, but it is not considered by legal construction or by ordinary understanding to be an income tax, because it is collected at the source without reference to the other income which may be received by dividend and interest recipients.

By 1938, the capitation or poll tax evolved into two separate income taxes, one applying a flat-rate tax on salaries, pensions, and other similar fixed types of payments to individuals, and the second (called the general income tax) applying progressive rates to all incomes, including salaries. Finally in 1941, a special tax on agricultural, commercial, and industrial profits was added, applying to both unincorporated and incorporated businesses.

There is thus no lack of variety in Viet-Nam's system of taxing income. There are at present five separate and distinct taxes, which together comprise the system of taxing income: (1) a tax of 1 to 5 per cent on wages and salaries; (2) a tax on profits earned by individuals and the self-employed at the rate of 16 per cent; (3) a tax on profits earned by incorporated businesses at the rate of 24 per cent; (4) a tax on dividends and interest paid by corporations at rates varying between 18 and 30 per cent; and (5) a general income tax on all incomes received by individuals with rates from 1 to 50 per cent.

Another way of looking at these five income taxes is to view them as forming two levels of taxation. First, there are four schedular taxes applied to four distinct categories of income — on salaries, profits of individuals, profits of corporations, and on dividends and interest paid by corporations. Of these four schedular taxes, only the one on salaries is levied at a progressive rate. Each of the separately taxed categories of income is then taxed once more when received by individuals under a personal or general income tax, levied at progressive rates and with respect to total income from all sources, including income not taxable under the four schedules.

There are two dates of significant importance in the evolution of the administrative responsibilities of the income tax. When the several income taxes were introduced, there were three regional governments in Indochina — in the North, Center, and South — and each region had several provinces. Although the income tax was introduced in all three regions, the rates and bases of the tax varied from region to region. These variations in rates and bases were removed in 1953 when a new fiscal code was adopted, making the taxation of income uniform throughout Viet-Nam. The second administrative milestone was in 1955, when a decree created the General Directorate of Taxation and gave this agency the responsibility for administering the income taxes for all of Viet-Nam.

THE TAX ON WAGES AND SALARIES

In addition to wages and salaries, the base of this tax includes indemnities, emoluments, pensions, and annuities, and embraces all compensations for service

1. The monetary unit in Viet-Nam is the piaster, designated as \$VN. Viet-Nam has a multiple exchange rate system, with an official rate of 35 \$VN = \$1.00 U.S. (or 98 \$VN per pound sterling) and a free market rate of approximately 70.50 to 73.50 \$VN = \$1.00 U.S. (or 199 to 205.50 \$VN per pound sterling).

whether in income or in kind. The tax rates applied to salaries and wages are progressive in the range of 1 to 5 per cent, but there are only three brackets; 1 per cent on income up to 50,000\$VN; 2 per cent on income from 50,000\$VN to 100,000\$VN; and 5 per cent on income over 100,000\$VN. Taxable income of less than 1,000\$VN is exempt. The abatements (personal exemptions) are 30,000\$VN for single persons and heads of households; 15,000\$VN additional for married persons; 5,000\$VN for each child under 21 years of age supported by the taxpayer; and 3,000\$VN for each parent or grandparent over the age of 60 years supported by the taxpayer, or under 60 years if ill and incapable of self-support. The tax on salaries and wages is only applied when there is a *bona fide* employer-employee relationship; it is not paid by the self-employed.

The salary tax is to a large extent a tax on civil servants. Out of the total number of about 15,000 declarations received annually, about 7,500 returns are from civil servants, and another 5,000 returns are received from army personnel. As a result, there remains 2,500 salary tax returns for the private sector of Viet-Nam. About 11,000 out of the 15,000 salary returns are attributable to the city of Saigon-Cholon.

The only area in which there is withholding of the salary tax is from payments to army personnel.² This procedure was initiated in 1957. With the present level of salary and abatements, withholding for army personnel presently does not take effect below the rank of a first lieutenant. Provision is made in the Fiscal Code for the extension of withholding to other areas at the administrative discretion of the Minister of Finance.

If a person has income from both salary and profits, he must complete two tax declarations: one for the salary tax and the profits tax, and a second for the general income tax, but there are three separate tax calculations — one for each tax. All deductions are the same in determining the taxable income for each tax with the exception of the deduction for taxes paid. This deduction is limited to the particular income tax paid.

THE TAX ON AGRICULTURAL, COMMERCIAL, AND BUSINESS PROFITS

This levy on both natural and artificial persons is looked upon in Viet-Nam as a single tax on business and professional income, and the legal conditions of its application carry out this unified approach because all provisions of the tax are in Title 1 of the General Code of Income Taxes of April 13, 1953. There are, however, sufficient differences in the application of the tax between corporate and natural persons to warrant classifying the levy into two separate taxes. There are two reasons justifying this classification: (1) unincorporated businesses are taxed at a rate of 16 per cent and incorporated businesses at 24 per cent; and (2) the profits tax on individuals has the same abatements (personal exemptions) as the income tax on salaries and the general income tax, while the profits tax on corporations is a business rather than a personal tax. Partnerships are taxed like individual proprietorships.

The base of the profits tax, for both the levy on natural and artificial persons, includes income arising from seven sources: (1) industry and commerce; (2) professional activities; (3) land and buildings; (4) rice and other agricultural products; (5) rubber plantations; (6) mining; and (7) salt and quarries. Income from stocks and bonds is exempt from the profits tax, apparently on the grounds that such income is taxed by the special levy on dividends and interest

2. The term "withholding" refers to the procedure of requiring the payers of income to deduct income tax liabilities from payments being made to income recipients and to forward these tax collections to the government.

paid by corporations. Capital gains from the sale of corporate shares are also exempt from the profits tax, and gains from the sale of land and improvements are exempt if reinvested within three years.

Deductions include, in general, all ordinary and necessary expenses attributable to earning the profit. These include administrative expenses of all kinds, as well as rent, labor, depreciation, etc. The law permits the carrying forward of business losses for three years, provided that the losses have not been deducted from the general income tax.

THE TAX ON DIVIDENDS AND INTEREST PAID BY CORPORATIONS

The convention among some Vietnamese tax administrators is to consider the tax on distributed corporate dividends and on interest paid by corporations as something apart from the taxation of income. Although the tax on dividends and interest paid by corporations is called a "registration" tax, and although it is administered separately from the other income taxes, it is really part of the overall system of income taxation. This is apparent by considering the total tax burden on the net income realized by a corporation. Corporations first bear a corporate profits tax levied on all of their profits of 24 per cent. Then there is a tax on dividends and interest paid by these firms of 18 to 30 per cent, the rate depending on certain characteristics of the corporation. Finally, corporate dividends and interest payments received by individuals are taxed under the general income tax. Conceptually, all of these taxes are part of the total income tax burden on corporate investors and creditors.

According to the law, the tax is an obligation of the shareholder rather than that of the corporation, but in practice the administrators of the tax have no contact with the shareholder. The tax may be looked upon as a withholding levy in the sense that dividends and interest are exempt from the individual profits tax. Some of this rationale is lost, however, in view of the fact that the tax on dividends and interest varies between 18 and 30 per cent, while the profits tax on individuals is only 16 per cent.

For application of the dividends and interest tax, corporations are first divided into foreign and Vietnamese. This distinction is based on whether or not the headquarters of the corporation is located in Viet-Nam. Corporations headquartered in Viet-Nam are taxed at the rate of 18 per cent on dividend payments if the shares are privately held and at the rate of 24 per cent if the shares are publicly held. Interest payments for both types of corporations are taxed at 18 per cent. Corporations with headquarters outside of Viet-Nam (foreign corporations) are taxed at the rate of 30 per cent on all dividends and interest payments allocated to Viet-Nam. The allocation is made on the basis of the total "turnover" resulting from operations in Viet-Nam and the total "turnover" of the corporation. In other words, the application of the tax follows the formula:

$$30\% \times \text{total distribution} \times \frac{\text{"turnover" resulting from operations in Viet-Nam}}{\text{total "turnover" of the corporation}}$$

The determination of what constitutes "turnover" depends on the nature of the business. Examples are: amount of premiums for insurance companies; amount of loans for mortgage companies; amount of assets for real estate companies; physical amount of product for plantations; amount of sales for commercial businesses; and amount of receipts for banks. There is the presumption that the tax has several unneutralities among various businesses with such diverse bases being used for application of the tax rate.

THE GENERAL INCOME TAX

The base of the general income tax is the total income of individuals after subtracting the same deductions allowable for the salary and profits tax. Practically every taxpayer subject to a schedular tax is also subject to the general income tax. Dividends are taxable, even though a withholding tax on dividends has been applied at the corporate level. Salary and profits taxes of the previous year, as well as the general income tax paid in the previous year, are deductible from gross income. Other deductions include the receipt of certain pensions, interest on government bonds with a maturity of over three years, payments for pensions, and interest on personal debts.

Tax rates for the general income tax are progressive in the range of 1 to 50 per cent. They begin at 1 per cent on an income of less than 10,000\$VN; increase by 1 per cent for each bracket of 10,000\$VN in income up to 100,000\$VN; and then increase by 5 per cent for each bracket of 100,000\$VN in income until the maximum rate of 50 per cent is reached at an income of 800,000\$VN.

An interesting feature of the general income tax is the attempt to favor families and dependents through both abatements and the payment of a lower rate. Before 1953, tax liability was increased by 20 per cent for single persons or childless married persons above 30 years of age who had a taxable income of more than 200,000\$VN. Since 1953, this "penalty" of 20 per cent is restricted to single persons and divorced taxpayers without children earning more than 200,000\$VN in taxable income. There is no provision for income splitting. Instead, the general income tax is assessed on the income of the entire household, which includes the personal income of the head of the household as well as that of his wife and of other members of the family living with the taxpayer.

ASSESSMENTS

There is a sharp difference in the administrative procedure of assessing and collecting four of the income taxes in Viet-Nam as compared to the fifth one. The unique case is the tax on dividends and interest paid by corporations. This tax requires voluntary assessment and current payment (or withholding) of the tax on the part of corporations, and the tax collections are made by the General Directorate of Taxation instead of by the General Treasury. As a result, assessment and final collection totals are identical. The other four income taxes — on salaries, individual profits, corporate profits, and the general income tax — follow three steps in administration: (1) The taxpayer has the obligation to forward a tax return, which should contain all the relevant information needed for the assessment of the tax; (2) It is the responsibility of the General Directorate of Taxation to calculate and assess the tax based on the information given by the taxpayer, or to verify the information if need be; and (3) The General Treasury has the responsibility of collecting all tax assessments made by the General Directorate of Taxation.

Three important policy conclusions are apparent from analyzing the historical assessment record in Viet-Nam:

(1) *The system of taxing income is particularly burdensome on non-wage income.³* This is apparent by assigning percentages to the total of all assessments for financial years 1954 to 1958 inclusive.

3. This burden refers only to statutory rates and not to degrees of evasion practised by different types of income receivers.

The results obtained are:

<i>Type of Tax</i>	<i>Total Assessments (Per Cent)</i>
Profits of individuals and corporations	52.9
Dividends and interest	23.9
General income tax	13.5
Unclassified	7.7
Salaries and wages	2.0
	<hr/>
Total	100.0
	<hr/>

These data may be refined by making adjustments for the fact that wages and salaries are also taxed under the general income tax, and also to compensate for a proportion of the salary tax which is included in the category "unclassified." It is estimated that two-thirds of the general income tax is attributable to wages and salaries, and one-tenth of the unclassified category is assignable to the salary tax. Making adjustments for these two circumstances results in the estimate that approximately 12 per cent of all income tax assessments are borne by wages and salaries and the remaining 88 per cent by the sum of dividends, interest, rent, and profits.

(2) *The system of taxing income in Viet-Nam is particularly burdensome on the corporate form of business.* Although there is no accurate breakdown available to show what proportion of the tax on profits is attributable to individuals as compared to corporations for all of Viet-Nam, statistics for Saigon (where a separation is made) make possible the reasonably accurate estimate that 90 per cent of all profits tax assessments is borne by corporations. Combining this estimate with the known percentage of total assessments attributable to the tax on dividends and interest paid by corporations, and making adjustments for assessments on corporate earnings which are included in the general income tax and the "unclassified" category, results in the estimate that about 77 per cent of all income tax assessments are borne by corporate earnings. Since it has been determined previously that about 12 per cent of all assessments are attributable to salaries and wages, there remains a residual of some 11 per cent of all assessments which is borne by the sum of profits, rent, and interest received by individuals.

(3) *Total income tax assessments in recent years have not kept pace with the trend of total tax revenues or with the level of general economic activity.* Table 1 indicates that there has been an increase in income tax assessments from 1954 to 1955 of from 845 million \$VN to 1,008 million \$VN. Then total assessments fell to 989 million \$VN in 1956, and to 764 million \$VN in 1957. Financial year 1958 represents a recovery, with 790 million \$VN for 12 months, this total likely to rise to about 840 million \$VN by the end of the financial year.⁴ But even with this recovery, total income tax assessments in financial year 1958 will be lower than in either 1955 or 1956.

4. The financial year in Viet-Nam is 17 months, extending from January 1 of one year to May 31 of the following year. This means, for example, that income earned during calendar year 1957 will be assessed during financial year 1958, which extends from January 1, 1958 to May 31, 1959.

TABLE 1. INCOME TAX ASSESSMENTS, TOTAL TAX REVENUES, AND
NET DOMESTIC PRODUCT

Financial Year	Total Income Tax Assessments	Total Tax Revenues	Ratio of Income Tax Assessments to Total Tax Revenues	Net Domestic Product
	(Millions of \$VN)	(Millions of \$VN)	(Per Cent)	(Millions of \$VN)
1954	845	5,486	15.4	Not Available
1955	1,008	5,252	19.0	Not Available
1956	989	6,308	15.7	64,264
1957	764	8,138	9.4	69,419
1958	790 ¹	7,334	10.8	69,200 ²

¹Incomplete — 12 out of 17 months.

²Estimated.

Source: General Directorate of Taxation for income tax assessments; total tax revenues from the Ministry of Finance; and net domestic product data from the National Bank of Viet-Nam.

This decrease in income tax assessments is the opposite to what is to be expected in an expanding economy. It is a characteristic feature of the income tax for it to be elastic with respect to changes in the national income; in other words, a given increase in the national income will result in a more than proportionate increase in income tax receipts, other things being equal. Therefore, if the administration of the income tax is considered to be a constant, the decrease in income tax assessments in Table 1 would imply that a recession started after income year 1954 (financial year 1955) and that Viet-Nam only started to recover from this recession in income year 1957, which is reflected in higher assessments in financial year 1958. But other data in Table 1 contradict the hypothesis that decreased income tax assessments are attributable to depressed economic conditions. Although income tax assessments have decreased, total tax revenues have continued to rise each year since financial year 1955. Net domestic product data also show an increase from 64,264 million \$VN in financial year 1956 to 69,419 million \$VN in financial year 1957, while during the same two-year period income tax assessments decreased. The net domestic product data show that Viet-Nam did have a recession, but this occurred during income year 1957 (financial year 1958).

COLLECTIONS

Withholding and prepayment of income taxes in Viet-Nam are presently confined to two rather limited areas — on dividends and interest paid by corporations and on the salaries of members of the armed forces. As a result, the great bulk of collection is done through formal assessment, the preparation of tax rolls by the General Directorate of Taxation, and collection by the General Treasury. The result of this system is that income earned during calendar year 1957 will not be assessed completely until May 31, 1959, and in the most part the tax will not be collected until 1959.

For the overall period from 1954 to 1958, the ratio of collections to assessments for the salary tax was 54.4 per cent. Similar ratios are 85.9 per cent for the profits tax and 70.2 per cent for the general income tax. For all taxes and for the period from 1954 to 1958, the General Treasury collected 77.6 per cent of assessments made by the General Directorate of Taxation.

COMPARATIVE INCOME TAX BURDENS

It is conceived as the basic premise of the income tax that the receipt of income constitutes the measuring rod of the ability to pay the tax. For this reason, it is assumed that taxpayers who receive the same amounts of income should be treated in the same way, while taxpayers receiving different amounts of income should be treated differently. When this results, the tax system is said to be neutral among taxpayers; when it does not, it is said to be unneutral. It follows that it is a matter of importance to inquire into the degree of neutrality which exists in the Vietnamese system of taxing income.

Analysis of the income tax burden borne by particular receivers of income gives the following significant results: (1) Because of particular deductions permitted to civil servants, rather substantial levels of taxable income deteriorate into reduced levels of taxable income. For example, a gross income of 123,330\$VN is reduced by successive deductions to a taxable income for both the salary and general income taxes of 5 per cent of this amount or 5,849\$VN. (2) For a taxpayer with the same gross income, but working in the private sector, the ratio of taxable income to gross income is 24 per cent, or nearly five times higher. (3) At this same level of income, self-employed professional people and individuals in receipt of income other than wages and salary have a ratio of taxable to gross income of 38 per cent. In addition, this type of income bears a higher tax rate than wages and salary.

TABLE 2. EFFECTIVE RATES OF THE SALARY, INDIVIDUAL PROFITS, CORPORATE PROFITS, AND GENERAL INCOME TAXES

Gross Income (\$VN)	Effective Rate (per cent)				
	Salary and general income taxes, civil servant	Salary and general income taxes, private sector	Individual profits and general income taxes,	Corporate and general income taxes, assuming 50% distribution	Corporate and general income taxes, assuming 100% distribution
70,000	—	—	0.24	—	—
123,330	0.08	0.69	6.98	—	—
172,363	1.03	2.18	10.32	—	—
265,667	3.35	5.93	14.81	—	—
523,458	5.29	10.95	20.41	33.56	44.03
1,000,000	—	—	24.68	34.63	46.14
2,000,000	—	—	26.65	35.09	46.98

The data in Table 2 have been assembled in order to demonstrate the effects of these unneutralities among taxpayers and to offer further evidence that the income tax burden in Viet-Nam is determined as much by the type of income received as by the level of income. For example, if a civil servant receives a gross income of 123,330\$VN, he will pay only .08 per cent of his gross income in income taxes, while if a second taxpayer is employed in the private sector at the same level of gross income, his tax burden will be .69 per cent of his gross income, or over 8 times higher. This difference arises because of the deductions which are allowed to civil servants and which are denied to private employees. Then if a third individual is self-employed, his tax rate at the same level of gross income will be 6.98 per cent, or 87 times the burden of the civil servant and 10 times the burden of the salary worker in the private sector. Another way of looking at this unneutrality is to note that each of the following levels of gross income bear

about the same income tax burden: (1) A civil servant with a gross income of 523,458\$VN; (2) A privately-employed worker with a gross income of 265,667\$VN; and (3) A self-employed person or businessman with a gross income of 123,330\$VN. Finally, corporate investors bear the heaviest tax burden, which varies between 50 and 100 per cent higher than investors in non-corporate enterprises.

CONCLUSION

The Republic of Viet-Nam has a system of taxing income which includes four schedular income taxes and a general income tax. Because of the variation in tax rates and bases among the several taxes, tax liability is determined as much by the type of income received as by the level of income. As a result, the Vietnamese system of taxing income places differential burdens on different income receivers. Placed in order of the lightest to the heaviest burden, the sequence is: (1) civil servants; (2) private employees; (3) the self-employed, individual investors, and private entrepreneurs; (4) investors in Vietnamese corporations; and (5) possibly owners of foreign corporations, although in this case a finite determination is not possible. For income tax policy purposes, these differential burdens may be weighed both with respect to equity objectives and the desire to encourage economic development by inducing higher levels of savings and investment.

BOOK REVIEW

D. B. Copland and R. H. Barback, Eds. *The Conflict of Expansion and Stability: Documents Relating to Australian Economic Policy 1945-52*, F. W. Cheshire, Melbourne, 1957 — Pp. ix + 789. £A3.7.6.

The editors of this reference book are well-known. Sir Douglas Copland — an economist — was Adviser to the Australian Government, then Australian Minister to China, Vice-Chancellor of the Australian National University, Canberra, High Commissioner for Australia in Canada, and is now Principal of the Australian Administrative Staff College, Melbourne.

Professor Ronald H. Barback was at one stage on the staff of the Canberra University College and is now Professor of Economics at the University College of Ibadan, Nigeria.

Copland and Barback have brought together in this book a wealth of material, judiciously chosen, illustrating the post-War economic development of Australia, and the problems faced by that country in moving forward from a state of war, and from a rather industrially underdeveloped past, into the position of a highly industrialised economy of international importance.

The book "is intended to be more or less a reference and source work . . .", and it is in fact a volume of great value in particular to the student of economic history.

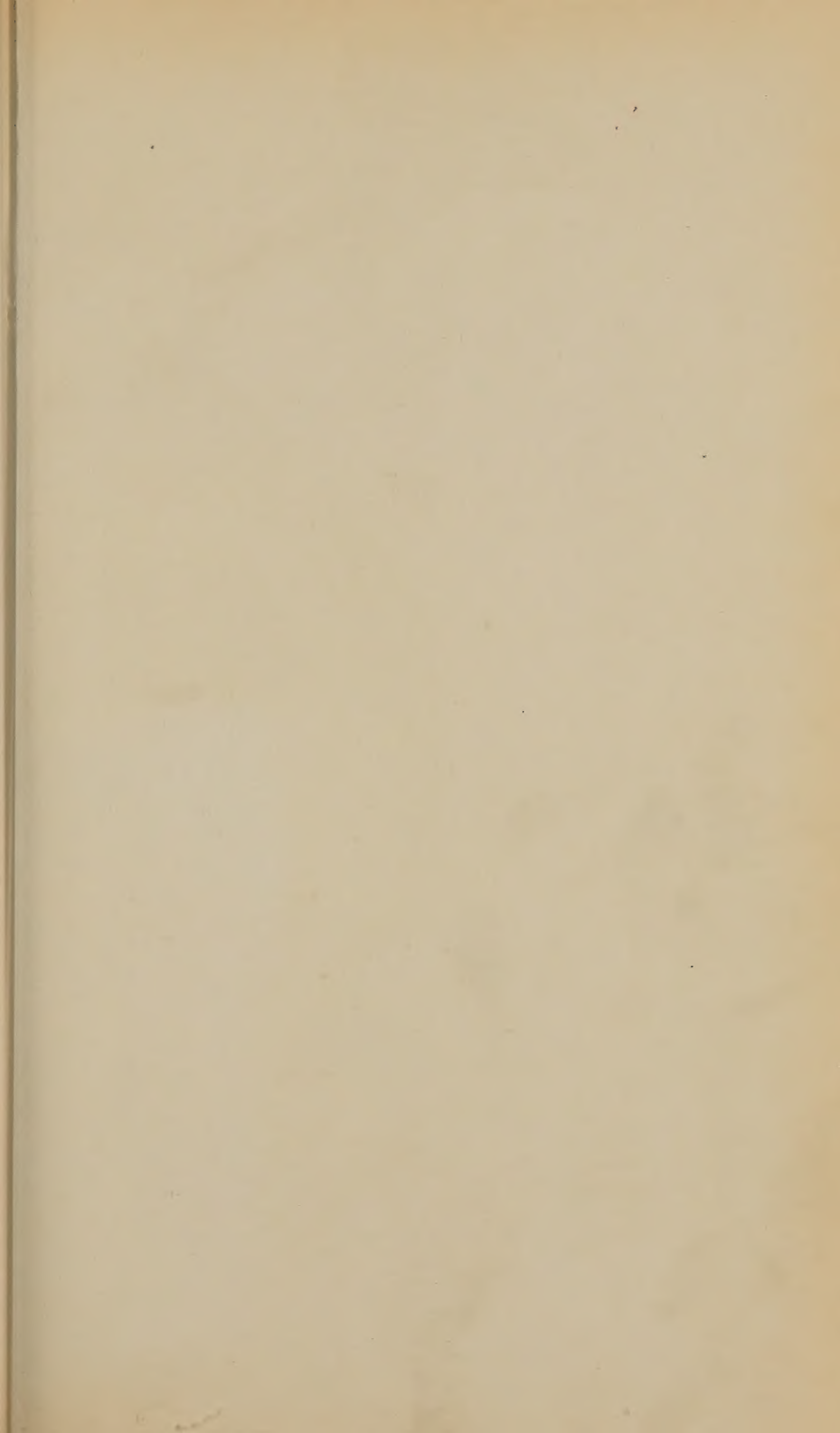
Through the documents it is shown that the Second Great War produced a number of stimuli necessary for Australia to emerge from her economic somnolence, prevalent between 1820 and 1939, so that she could leave behind her almost complete dependence on Britain and overseas country for industrial products and know-how. The process of industrialisation during the First Great War and soon after seemed, somehow, to come to a standstill, then to be affected by the world depression through which Australia suffered heavily. Yet it was at that time that Sir (then Professor) Douglas Copland, wrote some of his most conservative and pro-*laissez-faire* and strongly anti-Keynesian pieces. These would now make interesting material for comparison with the policies introduced by the Labour Party, which Copland himself, and Barback, so clearly present through their collection of documents.

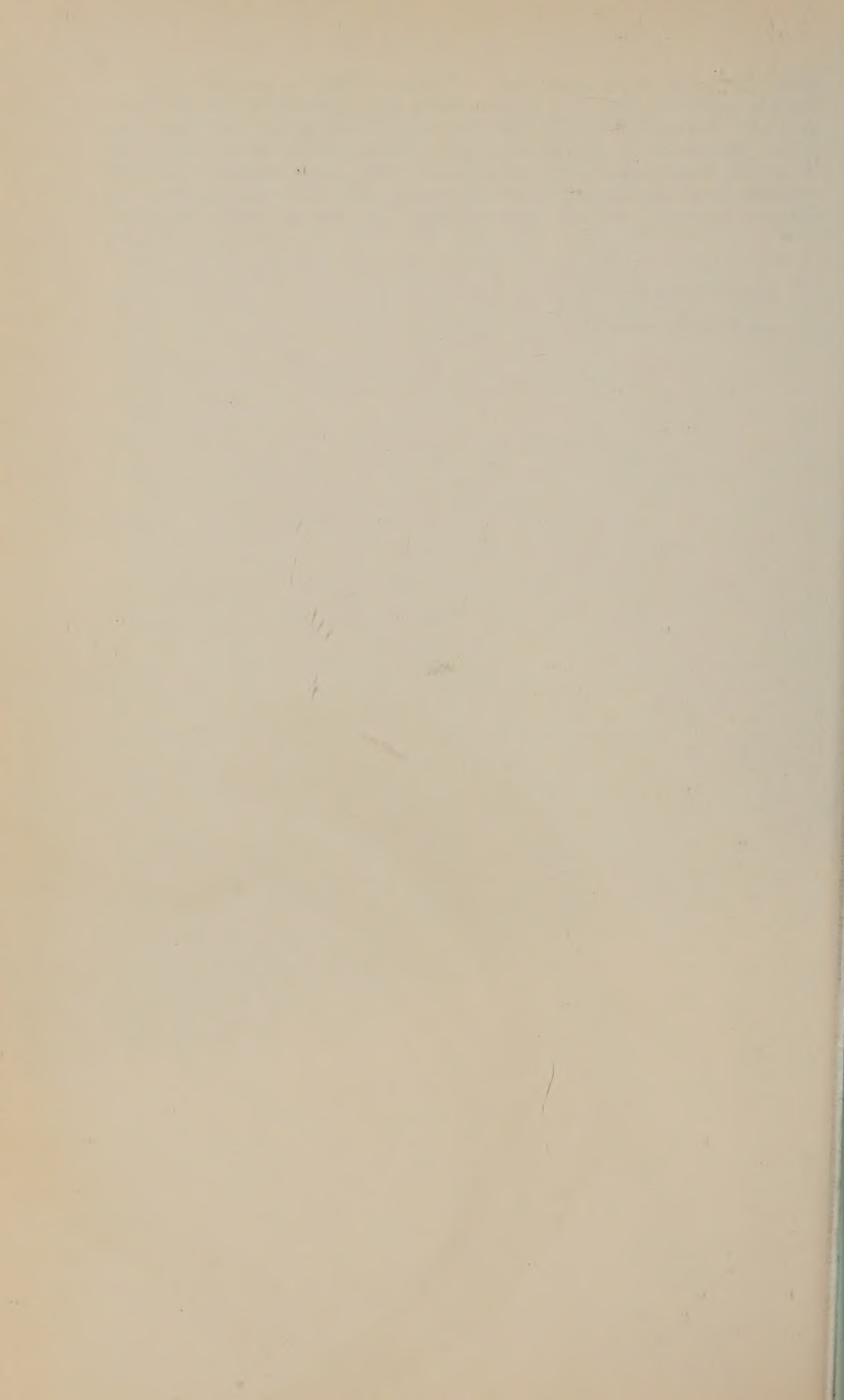
To Asian scholars this work is of interest in so far as it shows how Australia's thoughts, policies and views, have been heavily weighed by her insularity, that is, by her being ethnically a European country cut off from the rest of Europe. Today many Australians still cannot realise that their island-continent geographically faces Asia; but this is another question.

Scholars of political economy will also find useful material, particularly in the variation of views on employment and banking policies as expressed by Labour on the one hand, and on the other hand, by Liberal-Country Party (Conservative) Ministers. Much food for thought is provided here by documents showing a combination of *quasi*-socialist and conservative views in the overall field of national economic policy. The student of Federalism will find his own meat in States versus Commonwealth clashes, particularly on the question of Federal grants, and the ordinary University student will be helped in his study of applied economics.

All in all, one is pleased that such a book should be available. If, as the editors say, they may in the future present another and similar collection of documents, outlining the position between say 1952 and 1959, they will have been able to give to the foreign student a very clear picture of the development of Australia — an economy in which one does not find poverty; where the middle class is the largest; where trade unionism is one of the strongest in the Western world; and where socialism and capitalism have somehow discovered common grounds.

CHARLES GAMBA,
University of Malaya.





PRINTED AT
MALAYA PUBLISHING HOUSE
LIMITED • SINGAPORE

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Founded July 1956

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